Union Carbide Corporation
A Subsidiary of The Dow Chemical Company
3301 5th Ave. N.
Bldg. 88
Texas City, TX 77590
USA

July 21, 2014

FedEx Tracking # 780026904923

Mr. Mark Erwin
Project Manager
Corrective Action Team 1, VCP-CA Section
Remediation Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, MC 127
Austin, TX 78753

Re: First Half 2014 Semiannual Groundwater Monitoring Report
Union Carbide Corporation, Texas City Operations
Main Plant Facility
TCEQ Solid Waste Registration No. 30689
TCEQ Hazardous Waste Permit No. HW-50242
EPA ID No. TXD000461533
CN No. CN600356976 / RN No. RN100219351
Compliance Plan No. CP-50242

Dear Mr. Erwin:

Union Carbide Corporation (UCC), A Wholly Owned Subsidiary of The Dow Chemical Company (Dow), is submitting this report to the Texas Commission on Environmental Quality (TCEQ) as required by Compliance Plan No. CP-50242 Section VII.C.2 (Compliance Plan), which was approved and made effective February 7, 2005. In accordance with the Compliance Plan, groundwater monitoring occurs semiannually. This report presents information from the groundwater sampling event completed during the first half of 2014 at the UCC Main Plant Facility for the South In-Plant Disposal Area (IPDA) and Lake Rosie solid waste management units (SWMUs).

If you have any questions regarding this report, please contact me at 281-228-8190 or RWenzel@dow.com.

Sincerely,

Rick Wenzel, P.G. (Texas)
Remediation Leader
6519 HWY 225
Deer Park, TX 77536

cc: Jason Ybarra/TCEQ Region 12 - **FedEx Tracking # 780026919547**
Bill Gallagher – EPA Region VI
Leonard Polk/TxDOT
Meredith Harris /CH2M HILL, Houston, TX

Texas Commission on Environmental Quality

Remediation Division Correspondence Identification Form

SITE & PROGRAM AREA IDENTIFICATION

SITE LOCATION				REMEDIATION DIVISION PROGRAM AND FACILITY IDENTIFICATION	
Site Name:	**UCC, A Subsidiary of the Dow Chemical Company**			Is This Site Being Managed Under A State Lead Contract? ☐ Yes ☑ No	
Address 1:	**3301 5th Avenue South**			Program Area:	**IHW CORRECTIVE ACTION**
Address 2:				Mail Code:	**MC-127**
City:	**Texas City**	State:	**Texas**	Is This A New Site To This Program Area? ☐ Yes ☑ No	
Zip Code:	**77592-0471**	County:	**Galveston**	**TCEQ Facility ID No.:**	**30689**
TCEQ Region:	**Region 12 - Houston**			**--Leave This Field Blank--**	**--Leave This Field Blank--**

DOCUMENT(S) IDENTIFICATION

	PHASE OF REMEDIATION	DOCUMENT NAME
1.	**REMEDIATION**	**GROUNDWATER (OR OTHER MEDIA) MONITORING REPORT**
2.	**REMEDIATION**	**GROUNDWATER (OR OTHER MEDIA) MONITORING REPORT**
3.		
4.		
5.		

CONTACT INFORMATION

RESPONSIBLE PARTY/APPLICANT/CUSTOMER

Name:	**Rick Wenzel**						
Company:	**Rohm and Haas Inc., A Wholly Owned Subsidiary of The Dow Chemical Company**	Phone Number:	**281-228-8190**			Fax Number:	
Address 1:	**6519 HWY 225**	City:	**Deer Park**	State:	**TX**	Zip Code:	**77536**
Address 2:		Email Address:	**RWenzel@dow.com**				

ENVIRONMENTAL CONSULTANT/REPORT PREPARER/AGENT

Name:	**Meredith Harris**						
Company:	**CH2M HILL**	Phone Number:	**281-721-8400**			Fax Number:	**281-721-8401**
Address 1:	**14701 St. Mary's Ln**	City:	**Houston**	State:	**TX**	Zip Code:	**77079**
Address 2:	**Suite 300**	Email Address:	**Meredith.Harris@ch2m.com**				

TCEQ INTERNAL USE ONLY

Document No.	TCEQ Database Term	Document No.	TCEQ Database Term
1.		4.	
2.		5.	
3.			

Professional Signature and Seal

I certify that the geologic work produced in this report has been performed in accordance with the accepted industry standards and practices.

First Half 2014 Semiannual Groundwater Monitoring Report
Union Carbide Corporation, Texas City Operations
Main Plant Facility

Report Title

Professional Geoscientist

SCOTT M. STRATHOUSE, Ph.D., P.G. (TEXAS)	4327	July 2014
Professional Geoscientist	Geoscientist License number	Expiration date
Signature	July 17, 2014 Date	
(281) 721-8434	(281) 721-8401	Scott.Strathouse@ch2m.com
Telephone number	FAX number	E-mail

Seals, as applicable:

Geoscience Firm Number 50264

Final

First Half 2014 Semiannual Groundwater Monitoring Report

Main Plant Facility

Compliance Plan No. CP-50242

Prepared for

Union Carbide Corporation
A Wholly Owned Subsidiary of The Dow Chemical Company

Texas City Operations
Texas City, Texas

July 21, 2014

Contents

Tables

Figures

Acronyms and Abbreviations

1,2-DCA	1,2-dichloroethane
1,2-DCP	1,2-dichloropropane
AOC	Areas of Concern
APAR	Affected Property Assessment Report
ASP	Acid Sludge Pits
BCEE	bis(2-chloroethyl)ether
BKG	Background
CAO	Corrective Action Observation
CAS	Corrective Action System
cm/sec	centimeters per second
CP	Compliance Plan
DNAPL	dense nonaqueous phase liquid
GCWDA	Gulf Coast Waste Disposal Authority
GWPS	Groundwater Protective Standard
IPDA	In-Plant Disposal Area
ISM	Interim Stabilization Measure
LNAPL	light nonaqueous phase liquid
msl	mean sea level
NAPL	nonaqueous phase liquid
PMZ	Plume Management Zone
POC	Point of Compliance
RAP	Response Action Plan
TCEQ	Texas Commission on Environmental Quality
SH	State Highway
SWMU	Solid Waste Management Unit
VA-5	Vinyl Acetate

SECTION 1

Introduction

Union Carbide Corporation (UCC) A Wholly Owned Subsidiary of The Dow Chemical Company (Dow) began operations at the Main Plant Facility (Facility) in Texas City, Texas in 1941. This Facility covers approximately 440 acres. Compliance Plan (CP) No. 50242 provides regulatory requirements for groundwater monitoring at the In-Plant Disposal Area (IPDA) and Lake Rosie Solid Waste Management Units (SWMUs) at the Facility. Table 1-1 presents the groundwater monitoring well network for both the IPDA and Lake Rosie Area. The monitoring well network consists of Corrective Action System (CAS) recovery wells, Corrective Action Observation (CAO) wells, Point of Compliance (POC) wells, and Background (BKG) wells. Figures 1-1 and 1-2 show the layouts of the IPDA and Lake Rosie Area and the monitoring well networks, respectively.

The shallow stratigraphy beneath the facility consists of sand, silt, and clay layers of the uppermost Zone II Aquifer, that are interbedded across the site, typical of fluvial and coastal marsh depositional environments. The sand/silt layers are lenticular and hydraulically interconnected. Figure 1-3 shows the general stratigraphy underlying the facility. The Zone II Aquifer ranges from approximately 18 to 52 feet in thickness and it occurs between +5 and –10 feet mean sea level (msl).

Semiannual reporting requirements include the following steps: verifying monitoring well integrity, recording of groundwater elevations, and noting immiscible fluids, if present, at all CAO, POC, and BKG wells at the IPDA and Lake Rosie Area. CP Table IV indicator parameters are monitored in POC, CAO, CAS and BKG wells for specified IPDA and Lake Rosie Area (Table 1-2). Purge water is disposed in the UCC wastewater system before being treated at the Gulf Coast Waste Disposal Authority's (GCWDA's) facility in Texas City, Texas.

1.1 Groundwater Program Changes

Table 1-3 is a chronological list of wells added to, or deleted from, the CP since the updated CP was issued in February 2005.

1.2 Program Changes and Operational Difficulties

Table 1-4 lists modifications and amendments made to CP No. 50242 along with the corresponding approval dates by the Executive Director. Dow is currently working on a Hazardous Waste Permit/CP renewal application which will be submitted to the TCEQ in August 2014.

1.3 Monitoring Well Installation and Abandonment

UCC is in the process of evaluating the status of all monitoring wells at the facility and systematically plugging wells that are damaged, not used, not required by the CP, and not expected to be used in the future. No wells were plugged and abandoned during this reporting period. In addition, UCC has performed additional investigations for groundwater monitoring across the facility. In April 2014, UCC installed a total of three monitoring wells (MP02-14-698W-A, MP02-14-699W-A, and MP02-14-700W-A) for a groundwater delineation effort associated with two Areas of Concern (AOCs) in support of the Hazardous Waste Permit/CP renewal. Well installation reports, soil boring logs, and well completion diagrams for the monitoring wells listed above are included in Attachment 1.

1.4 Updated Schedule Summary

Since the original issuance of the CP, UCC implemented CP No. 50242, and evaluated the CP data collected during the first half 2014 semiannual groundwater sampling event. Table 1-5 is an updated schedule summarizing routine activities required by the CP as well as updated schedules for the proposed Affected Property Assessment Reports (APARs) at the facility.

1.5 Water-level Elevations and Nonaqueous Phase Liquid Measurements

Water levels at the facility's CAO, POC, and BKG wells and additional potentiometric observation wells were measured in the first and second quarters of 2014 and are shown in Tables 1-6a and 1-6b. Quarterly dense nonaqueous phase liquid (DNAPL) measurements were collected from six IPDA CP wells (MP47-95-323W-A, MP31-99-410W-A, MP31-81-D04W-A, MP31-82-D10W-A, MP31-82-D11W-A, and MP31-85-OW2W-A). A total of 2.47 and 2.38 gallons of DNAPL were recovered from these wells during the first and second quarters of 2014, respectively, for a total of 4.85 gallons of NAPL for this reporting period (Table 1-7). In addition to the quarterly DNAPL removal at the six CP wells, DNAPL was also removed weekly from CAS recovery wells MP31-90-108R-A, MP31-85-PW2R-A, and MP-37-00-532R-A. A total of 117 gallons of DNAPL were recovered from the CAS recovery wells during the first half of 2014 (Table 1-7). The total volume of DNAPL recovered at the facility during the first half of 2014 was 121.85 gallons (Table 1-7). No DNAPL or light nonaqueous phase liquid (LNAPL) was present in wells at the Lake Rosie SWMU. DNAPL thickness measurements are shown in Tables 1-7. Figure 1-4 shows DNAPL thickness measurements for the first and second quarters of 2014.

1.6 Potentiometric Surface Maps

The potentiometric surfaces for the first and second quarters of 2014, respectively, are shown in Figures 1-5a and 1-5b. The entire facility plan view provides a comprehensive understanding of the potentiometric surface, including data from plant-wide wells and from the recovery systems on the west side of State Highway (SH) 146. Groundwater flow generally trends to the north and west in areas of the facility that are north of the IPDA. In the area of the facility that lies south of the IPDA, the groundwater flow generally trends to the south. Horizontal wells appear to have localized influence on the direction of groundwater flow. In general, operation of the horizontal wells appears to create localized depressions in the potentiometric surface.

The hydraulic conductivity within the Zone II Aquifer varies by location across the facility. The hydraulic conductivity has been calculated from pumping test data at several locations in the plant and ranges from $9x10^{-4}$ to $1x10^{-3}$ centimeters per second (cm/sec) (UCC 1989). Table 1-8 contains facility groundwater flow gradient and velocities for the first and second quarters of 2014.

As stated in Attachment B (Item 16 of CP No. 50242), the Permitee shall compare old and new elevations from previously surveyed wells and determine a frequency of surveying not to exceed 5-year intervals. In December 2010, Doyle & Wachtstetter, Inc., surveyed the monitoring wells at the facility as part of the 5-year resurvey event. The next survey event will be conducted in 2015.

SECTION 2

In-Plant Disposal Area (IPDA)

The CP monitoring program for the IPDA consists of 10 CAS recovery wells, 15 CAO wells, 5 POC wells, and 1 BKG well. The groundwater monitoring well network for the IPDA is listed in Table 1-1 and illustrated in Figure 1-1.

Groundwater samples collected during the first half of 2014 from the IPDA wells were analyzed by Accutest Laboratories in Houston, TX, for the respective indicator parameters listed in CP Table IV and shown in Table 1-2. Analytical results are summarized in Tables 2-1 through 2-3. In general, the results indicated that affected groundwater exists along the south, east, and west sides of the IPDA.

2.1 Groundwater Monitoring Program Status

Of the 10 CAS recovery wells, 4 (MP31-90-102R-A, MP31-90-105R-A, MP31-90-106R-A, and MP31-05-684R-A) met the Groundwater Protective Standards (GWPS) in the first half of 2014 (Table 2-1). Of the 15 CAO wells, 7 (MP31-82-D06W-A, MP31-82-D08W-A, MP33-83-D14W-A, MP33-83-D17W-A, MP338-83-D19W-A, MP33-83-D20W-A, and MP31-85-D22W-A) met the GWPS in the first half of 2014 (Table 2-2). Four CAO wells (MP31-81-D04W-A, MP31-82-D10W-A, MP31-85-OW2W-A, and MP47-95-323W-A) were not sampled because of the presence of DNAPL. Two of the five POC wells (MP31-81-D01W-A, and MP31-89-117W-A) met the GWPS in the first half of 2014 (Table 2-3). Two POC wells (MP31-99-410W-A and MP31-82-D11W-A) were not sampled because of the presence of NAPL. In accordance with Provision VI.C.3.a.i. of the CP, no change will occur in the sampling and analysis program until all POC wells meet the GWPS for 3 consecutive years.

2.2 Concentration Isopleth Maps

Isopleth maps were developed for each indicator parameter listed in Table 1-2 that was detected at concentrations above the GWPS at the IPDA in the first half of 2014 (Figures 2-1 through 2-4). Based on this criterion, isopleth maps were constructed for 1,2-dichloroethane (1,2-DCA); 1,2-dichloropropane (1,2-DCP); bis(2-chloroethyl)ether (BCEE); and naphthalene at the IPDA. These maps indicate that affected groundwater exists mainly along the south, east, and west sides of the IPDA SWMU. While the BCEE concentration in POC well MP31-89-117W-A (located along the western margin of the IPDA) is currently below the respective GWPS, concentrations have fluctuated both above and below the GWPS over the past 5 years.

2.3 Effectiveness of the Corrective Action Systems

The CAS effluent data shown in Table 2-4 reflect all reported constituent concentrations detected above reporting limits in the recovered groundwater at the IPDA. Table 2-5 shows monthly tabulations of the quantity of recovered groundwater from the IPDA recovery systems and the total contaminant mass removed. Figure 2-5 shows graphs of the recorded flow volumes in gallons per month for the recovery systems during the first half of 2014.

Recovered groundwater collected from the IPDA recovery system is pretreated at the IPDA separation system before treatment at the GCWDA facility. Recovered groundwater collected from other recovery systems at the facility is collected in the process sewer in the wastewater system, except for recovered groundwater from well MP11-90-124R-A (located in the Lake Rosie Area) which flows to the facility's concentrated waste line. Collected DNAPL is disposed at the UCC residue recovery area. Attachment 2 contains a summary of maintenance activities which resulted in downtime for the IPDA recovery system. At no time during this reporting period did any operations for the recovery system stay out of operation long enough to require a Texas Commission on Environmental Quality (TCEQ) notification.

SECTION 3

Lake Rosie Area

The CP monitoring program for the Lake Rosie Area consists of two CAS recovery wells, four CAO wells, three POC wells, and one BKG well. The groundwater monitoring well network for the Lake Rosie Area is listed in Table 1-1 and illustrated in Figure 1-2.

Groundwater samples collected during the first half of 2014 for the Lake Rosie Area were analyzed by Accutest Laboratories in Houston, TX, for the respective indicator parameters (listed in the CP Table IV and shown in Table 1-2). Analytical results are summarized in Tables 3-1 through 3-3. In general, affected groundwater occurs in the vicinity of, and to the north and northwest of, the Lake Rosie SWMU.

3.1 Groundwater Monitoring Program Compliance Status

The two Lake Rosie CAS wells (MP-11-90-124R-A and MP-15-00-341R-A) did not meet GWPS concentration limits in the first half of 2014 (Table 3-1). Two of the four Lake Rosie SWMU CAO wells (MP10-89-125W-A and MP08-89-142W-A) met the GWPS concentration limits in the first half of 2014 (Table 3-2).

One of the three Lake Rosie POC wells (MP11-85-LR4W-A) met the GWPS concentration limits in the first half of 2014 (Table 3-3). In accordance with Provision VI.C.3.a.i. of the CP, no change will occur in the sampling and analysis program until all POC wells meet the GWPS for 3 consecutive years.

3.2 Concentration Isopleth Maps

Isopleth maps were developed for each indicator parameter listed in Table 1-2 that was detected at concentrations above the GWPS at the Lake Rosie Area in the first half of 2014 (Figures 3-1 and 3-2). Based on this criteria, isopleth maps were constructed for benzene and BCEE. These maps suggest that affected groundwater occurs near, and to the north and northwest of, the Lake Rosie SWMU.

3.3 Effectiveness of the Corrective Action Systems

Table 3-4 shows monthly tabulations of the quantity of recovered groundwater from the Lake Rosie Area recovery systems and the total contaminant mass removed. Figure 3-3 shows graphs of the recorded flow volumes in gallons per month for the recovery systems during the first half of 2014.

Recovered groundwater from CAS well MP15-00-341R-A is collected in the process sewer in the facility's wastewater system and recovered groundwater from CAS well MP11-90-124R-A flows to the facility's concentrated waste line. Attachment 2 contains a summary of maintenance activities which resulted in downtime for the Lake Rosie Area recovery systems. At no time during this reporting period did any recovery system downtime require TCEQ notification.

SECTION 4

Site-wide Corrective Action Systems

Additional ongoing groundwater recovery is occurring at four horizontal recovery wells (Vinyl Acetate [VA]-5 well, LaMarque well, Distal Plume well, and Building 180 well) to the west of the facility with recovered water being returned to the facility through a pipeline located under SH 146. There is also a vertical recovery well (MP37-00-532R-A) located on the western boundary of the facility near the former Well 132 Area. Table 4-1 provides analytical results for these recovery wells. Figure 4-1 shows graphs of the recorded flow volumes in gallons per month for the site-wide horizontal and vertical recovery wells during the first half of 2014. The potentiometric surface maps (Figures 1-5a and 1-5b) presented in Section 1.6 show the locations of the groundwater recovery systems. Groundwater recovery in these areas is discussed in the following sections.

4.1 Vinyl Acetate Area

The VA-5 horizontal recovery well was installed in 1998 and became fully operational on March 15, 2000. The recovery system is designed to contain and recover affected groundwater in the Zone II Aquifer. It consists of a groundwater pump-and-treat unit comprising one horizontal well screened in the Zone II Aquifer that is used to recover and achieve hydraulic control of affected groundwater in the area. Groundwater is removed from the recovery well using a surface diaphragm pump with the suction line inserted into the horizontal section of the well. The effluent from the recovery system is discharged directly to the process sewer in the facility's wastewater system.

4.2 Acid Sludge Pits Area

The recovery system for the Acid Sludge Pits (ASP) Area was initially constructed in 1996. The system is designed to contain and recover affected groundwater in the Zone II Aquifer. The system consists of a groundwater pump-and-treat unit comprising three horizontal wells (LaMarque, Distal Plume and Building 180) screened in the Zone II Aquifer to achieve hydraulic control of affected groundwater.

Groundwater is removed from the three recovery wells using surface diaphragm pumps with suction lines inserted into the horizontal section of each well. The effluent from the recovery system is discharged directly to the facility's wastewater treatment system.

4.3 Well 132 Area

The recovery system for the Well 132 Area was put into service in 1995. The system initially was designed to contain and recover affected groundwater in the Zone II Aquifer. During November and December 1996, DNAPL was reported in the effluent. The recovery system was modified to recover and manage DNAPL in addition to the recovered groundwater.

For the Well 132 Area, the system consists of a pump-and-treat unit comprising a vertical recovery well (MP37-00-532R-A) screened in the Zone II Aquifer that is used for dual-phase recovery and hydraulic control. UCC incorporated recovery well 532R-A into the recovery system and converted Well 132 from a recovery well into an observation well. Groundwater is removed from recovery well 532R-A using a pneumatic constant head pump. DNAPL is recovered by means of a peristaltic pump and dedicated stainless steel tubing. The effluent from the recovery system is discharged directly to the process sewer in the facility's wastewater system and DNAPL is disposed at the UCC residue recovery area. Recovery progress is monitored by periodic measurements of DNAPL thickness in Well 532R-A and by groundwater sampling and analysis of adjacent wells associated with AOC No. 1.

4.4 Pooled DNAPL Area

The recovery system for the Pooled DNAPL Area (also known as AOC No. 2) was constructed in 1996 and was designed for recovery and remediation of the Zone II Aquifer.

The system for the Pooled DNAPL Area initially consisted of a pump-and-treat unit made up of five 0.75-inch-diameter DNAPL recovery piezometers (MP43-96-369P-A, MP33-96-371W-A, MP14-96-372P-A, MP33-96-388P-A, and MP33-96-389P-A) and one 2-inch-diameter DNAPL recovery well (MP47-95-323W-A). Over the past few years, trace amounts of DNAPL have been recovered in the area. The 0.75-inch-diameter piezometers were plugged and abandoned in 2004 and documented in the July 21, 2005, CP Report. One 2-inch-diameter DNAPL recovery well (MP33-95-323W-A) was left in place as an observation well to continue monitoring this area for DNAPL. Additionally, the Pooled DNAPL Area is monitored from a nearby 4-inch-diameter well (MP31-82-D10W-A) that also is designated as a CAO well for the south IPDA.

SECTION 5

Corrective Action Investigations

Since the submission of the *Second Half 2007 Semiannual Groundwater Monitoring Report* for the Main Plant Facility, proposed schedules have been developed for preparing the APARs for the LaMarque and Lake Rosie Area, IPDA, VA-5 Area, and the Southwest Corner Area. The proposed schedules were submitted to TCEQ in a letter dated May 14, 2008, and approved by TCEQ in a letter dated June 27, 2008. The APAR for the LaMarque and Lake Rosie Area was submitted and approved by TCEQ in a letter dated October 27, 2009. The IPDA APAR was submitted to TCEQ on August 27, 2010, and approved by TCEQ in a letter dated June 24, 2011. The VA-5 APAR was submitted to TCEQ on October 28, 2010, and approved by TCEQ in a letter dated January 26, 2011. The APAR for the Southwest Corner Area was submitted on October 4, 2013 and approved on January 8, 2014. The RAP for the Southwest Corner Area was submitted to TCEQ on July 2, 2014.

5.1 Interim Stabilization Measure Program / Response Action Plan Updates

The Interim Stabilization Measure (ISM) program monitoring well networks for the Acid Sludge Pits Area, Chlorex Area, Dowtherm Area, VA-5 Area, Well 132 Area, and Pooled DNAPL Area have been updated due to APAR and Response Action Plan (RAP) investigations performed from 2008 to 2012. Based on the approval of the RAPs, wells listed in AOCs 1, 3, 4, 5 and in the SWMU No. 1 and VA-5 areas have transitioned from ISM program wells to Plume Management Zone (PMZ) wells and will be incorporated into the compliance monitoring program during the upcoming CP renewal application to be submitted in August 2014. Table 5-1 presents the groundwater monitoring well network for the RAP areas. Per the approved RAP schedule, monitoring wells are sampled on an annual basis and will be sampled in the second half of 2014.

SECTION 6

References

UCC. 1989. *Permit For Industrial Solid Waste Management Site, Permit No. 50242*. August 22, 1989.

Figures

658P-Ab
D19W-A
D17W-A
139W-A
P04P-A
102R-A
103R-A
104R-A
112W-A
105R-A
D01W-A
D06W-A
D20W-A
157W-B
120W-A
684R-A
IPDA Basin #8
106R-A
D22W-A
107R-A
122W-A
D08W-A
D03W-A
IPDA Basin #7
108R-A
156W-B
119W-A
D15W-A
U01W-A
121W-A
Former Lake Lardie
137W-A
D14W-A
U02W-A
IPDA Basin #6
IPDA Basin #5
OW2W-A
PW2R-A
D04W-A
D21W-B
323W-A
P03P-A
118W-A
117W-A
691W-B
410W-A
D10W-A
D12W-A
136W-A
109R-A
D11W-A
IPDA Basins #1 & #3
692W-B
Closed IPDA Basin #9
155W-A
D18W-A
31
33
34
37
32

IPDA Area
Key Map

Legend

- Background Well
- Corrective Action Observation Well
- Monitor Well Completed in the Zone II Aquifer
- Monitor Well Completed in the Zone IV Aquifer
- POC Well
- Recovery Well

Notes:
1) Shallow performance wells and POC wells are indicated by the suffix indicated by the suffix R-A.
2) Wells numbers have been abbreviated to exclude man plant zone designation and date of well installation. For example, well MP31-81-D01W-A is written as D01W-A.

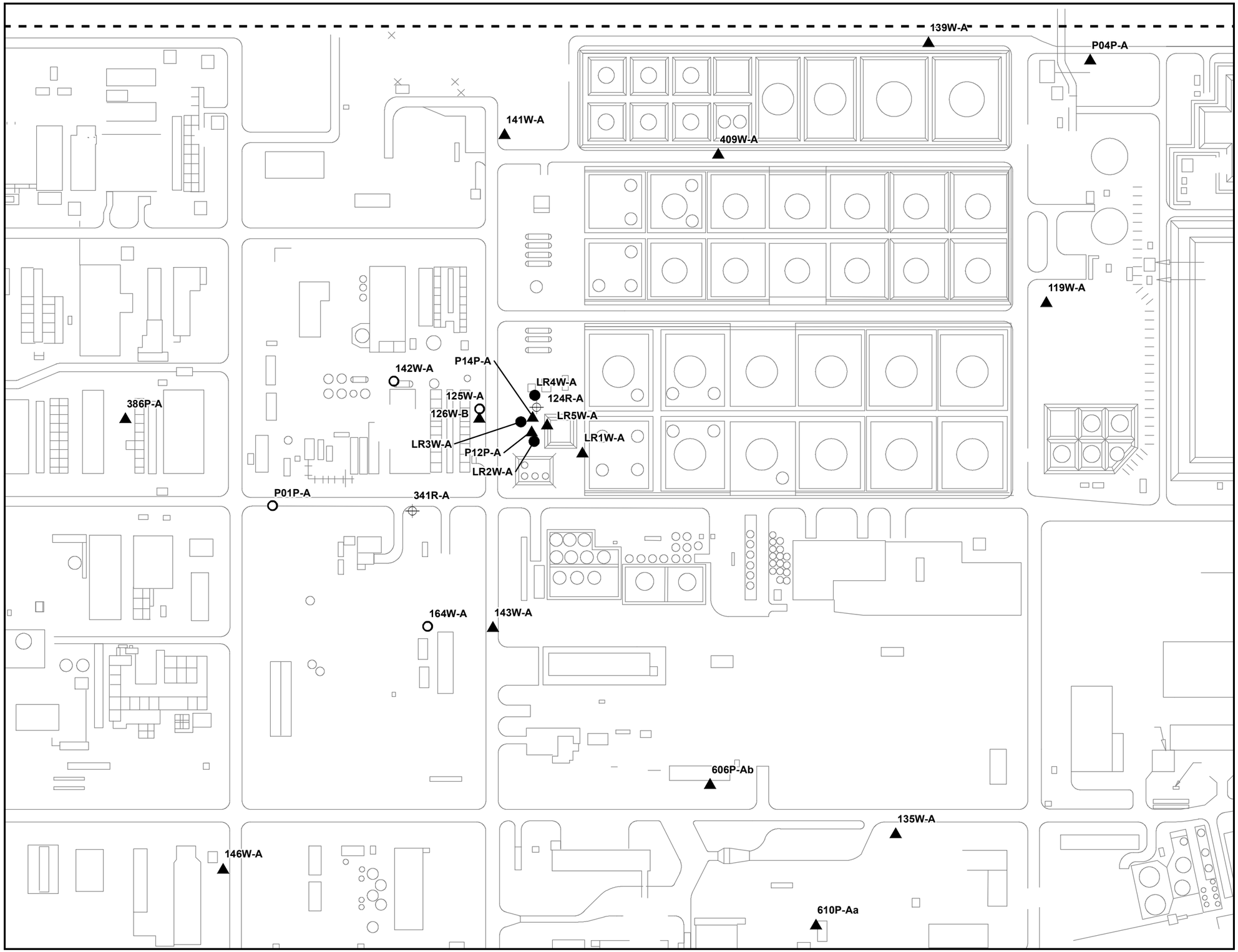
0 100 200
Feet

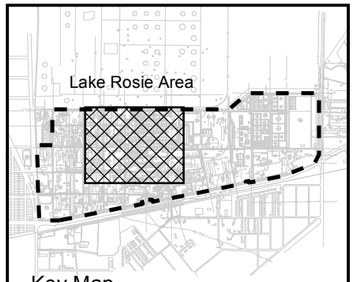
Figure 1-1
Well Location Map
In-Plant Disposal Area

Union Carbide Corporation
A Wholly Owned Subsidiary of
The Dow Chemical Company
Texas City Operations

Drawing Date: APRIL, 2014
Drawn By: CH2MHILL

R:\DOW_HOU\TCO\TCO_DOW_1H14_SEMIANNUAL_CPISM\MAPFILES\IPDA_WELL_LOCATION_MAP.MXD FLONDON 4/26/2014 7:31:06 AM





LEGEND

- Corrective Action Observation Well
- Monitoring Well
- Point of Compliance Well
- Recovery Well
- Facility Boundary

Notes:
1. Well numbers have been abbreviated to exclude main plant zone designation and date of well installation. For example, well MP11-85-LR1W-A is written as LR1W-A.

0 100 200 Feet

Figure 1-2
Well Location Map
Lake Rosie Area

Union Carbide Corporation
A Wholly Owned Subsidiary of
The Dow Chemical Company
Texas City Operations

Drawing Date: April 2014

Drawn By: CH2MHILL

R:\DOW_HOU\TCO\TCO_DOW_1H14_SEMIANNUAL_CPISM\MAPFILES\LAKE_ROSIE_SITE_MAP.MXD FLONDON 7/6/2014 10:19:24 AM

UPPER BEAUMONT FORMATION (PLEISTOCENE)	ZONE I	THICKNESS RANGE: 7 TO 18 FT.
	ZONE II	THICKNESS RANGE: 18 TO 52 FT.
	ZONE III	THICKNESS RANGE: 40 TO 75 FT.
	ZONE IV	THICKNESS RANGE: 13 TO 30 FT.
	ZONE V	THICKNESS RANGE: UNKNOWN

Union Carbide Corporation
A Wholly Owned Subsidiary of the Dow Chemical Company
Texas City Operations

Figure 1–3
General Stratigraphic Column
Main Plant Facility

CH2MHILL

R: \DOW_HOU\TCO\TCO_OPDA_APAR\GeoData\Vector\CAD

STATE OF TEXAS
SCOTT M. STRATHOUSE
GEOLOGY
4327
7/11/14
PROFESSIONAL GEOSCIENTIST
LICENSED

658P-Ab
D19W-A
D17W-A
139W-A
P04P-A
101R-A
102R-A
D01W-A
103R-A
104R-A
112W-A
105R-A
D06W-A
D20W-A
157W-B
120W-A
684R-A
IPDA Basin #8
106R-A
D22W-A
107R-A
122W-A
D08W-A
D03W-A
IPDA Basin #7
108R-A
D15W-A
119W-A
156W-B
U01W-A
Former Lake Lardie
121W-A
137W-A
U02W-A
D04W-A
1Q - 4.60
2Q - 4.80
IPDA Basin #6
IPDA Basin #5
OW2W-A
1Q - 0.20
2Q - 0.20
PW2R-A
D14W-A
323W-A
1Q - 0.60
2Q - 0.80
P03P-A
136W-A
118W-A
117W-A
691W-B
410W-A
1Q - 0.80
2Q - 0.60
D21W-B
D12W-A
109R-A
D10W-A
1Q - 0.01
2Q - 0.01
IPDA Basins #1 & #3
D11W-A
1Q - 1.60
2Q - 1.40
692W-B
Closed IPDA Basin #9
155W-A
D18W-A

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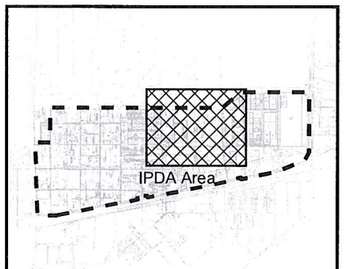

Key Map

Legend

- Background Well
- Corrective Action Observation Well
- Monitor Well Completed in the Zone II Aquifer
- Monitor Well Completed in the Zone IV Aquifer
- Point of Compliance Well (POC)
- Recovery Well
- **0.60** DNAPL Thickness (measured in ft)

Notes:
1) 1st Quarter measurements taken March 3, 2014
2) 2nd Quarter measurements taken May 9, 2014.
2) Wells numbers have been abbreviated to exclude man plant zone designation and date of well installation. For example, well MP31-81-D01W-A is written as D01W-A.

0 100 200
Feet

Figure 1-4
Monitoring Well DNAPL Thickness
1st and 2nd Quarter 2014
In-Plant Disposal Area

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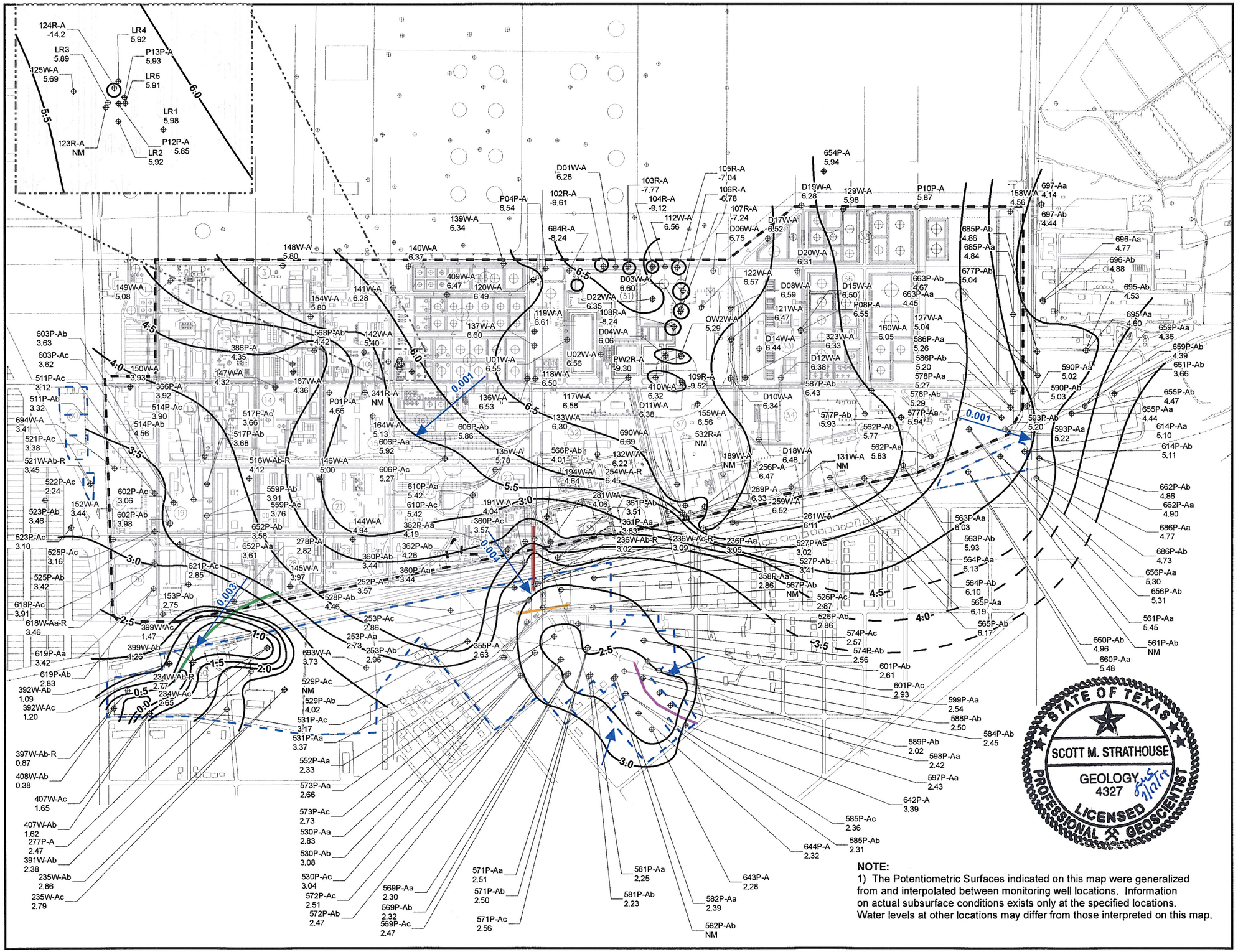
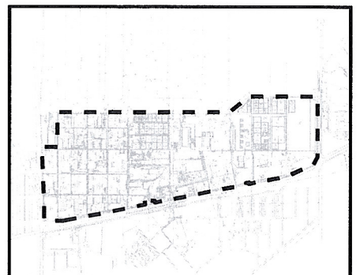
Texas City Operations

DOW

Drawing Date: April 2014

Drawn By: CH2MHILL





LEGEND

- Site Boundary
- UCC Off-Plant Property Boundary
- MP-39-89-158W-A 4.72 — Sample Location with Groundwater Elevation
- Area of Groundwater Depression
- Groundwater Elevation Contour Line, Countour Interval = 0.5 ft
- Groundwater Elevation Contour Line, Dashed Where Inferred
- Groundwater Flow Direction (Streamline)
- NM — Not Measured

Horizontal Wells
- Bldg 180
- LaMarque
- VA-5
- Distal

Note:
1) Water Levels measured on March 3, 2014.
2) Some Contour Intervals Around Areas of Depression May Vary Due to Steep Gradient.

0 500 1,000
Feet

FIGURE 1-5a
Zone II Potentiometric Surface
1st Quarter 2014
Main Plant

Union Carbide Corporation
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Texas City Operations

April 2014

Geoscience Firm Registration No. 50264

Drawn By: CH2MHILL

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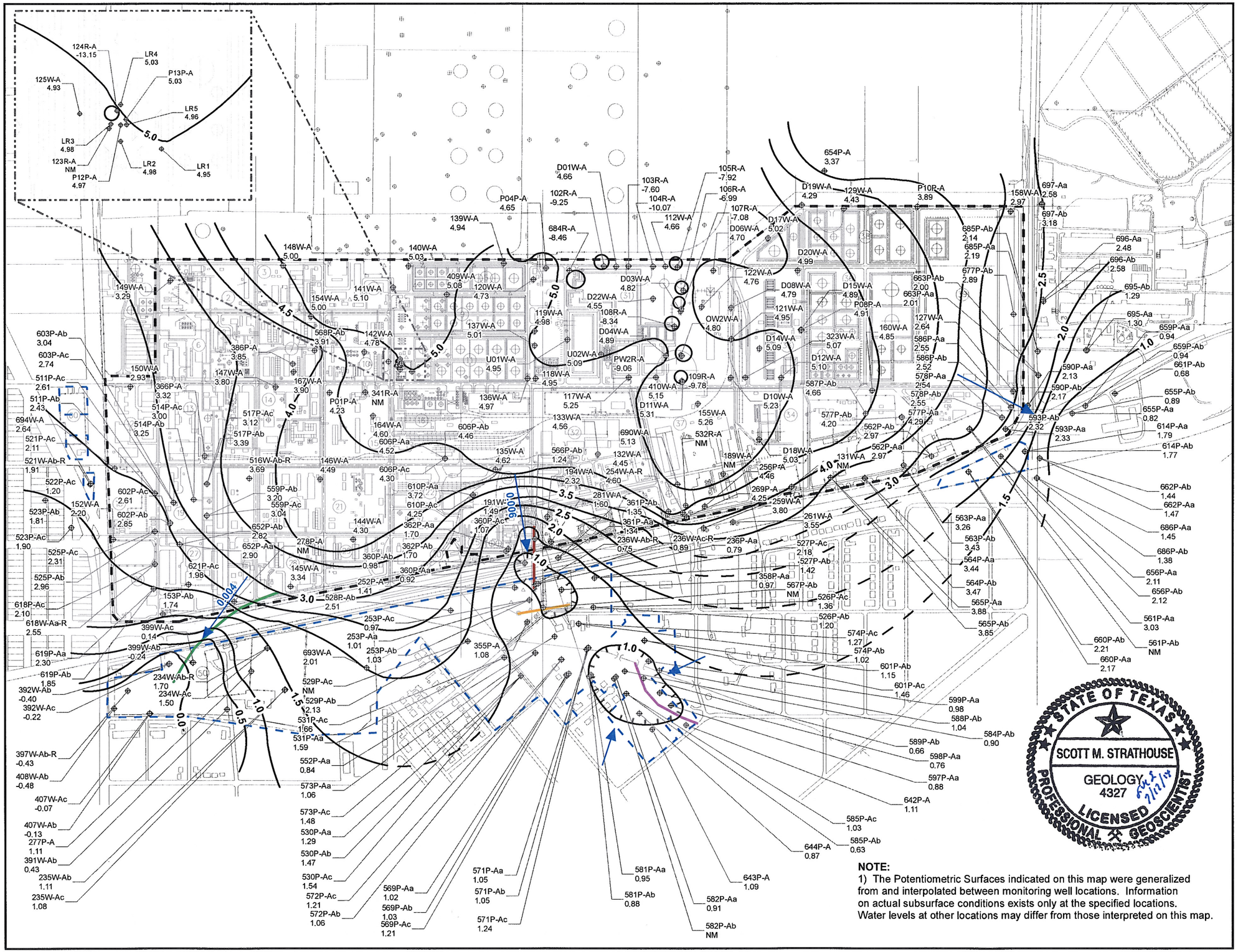

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LEGEND

- Site Boundary
- UCC Off-Plant Property Boundary
- MP-39-89-158W-A 4.72 — Sample Location with Groundwater Elevation
- Area of Groundwater Depression
- Groundwater Elevation Contour Line Countour Interval = 0.5 ft
- Groundwater Elevation Contour Line Dashed Where Inferred
- Groundwater Flow Direction (Streamline)
- NM — Not Measured

Horizontal Wells
- Bldg 180
- LaMarque
- VA-5
- Distal

Note:
1) Water Levels measured on May 9, 2014.
2) Some Contour Intervals Around Areas of Depression May Vary Due to Steep Gradient.

0 500 1,000
Feet

NOTE:
1) The Potentiometric Surfaces indicated on this map were generalized from and interpolated between monitoring well locations. Information on actual subsurface conditions exists only at the specified locations. Water levels at other locations may differ from those interpreted on this map.

STATE OF TEXAS
SCOTT M. STRATHOUSE
GEOLOGY
4327
7/12/14
PROFESSIONAL GEOSCIENTIST
LICENSED

FIGURE 1-5b
Zone II Potentiometric Surface
2nd Quarter 2014
Main Plant

Union Carbide Corporation
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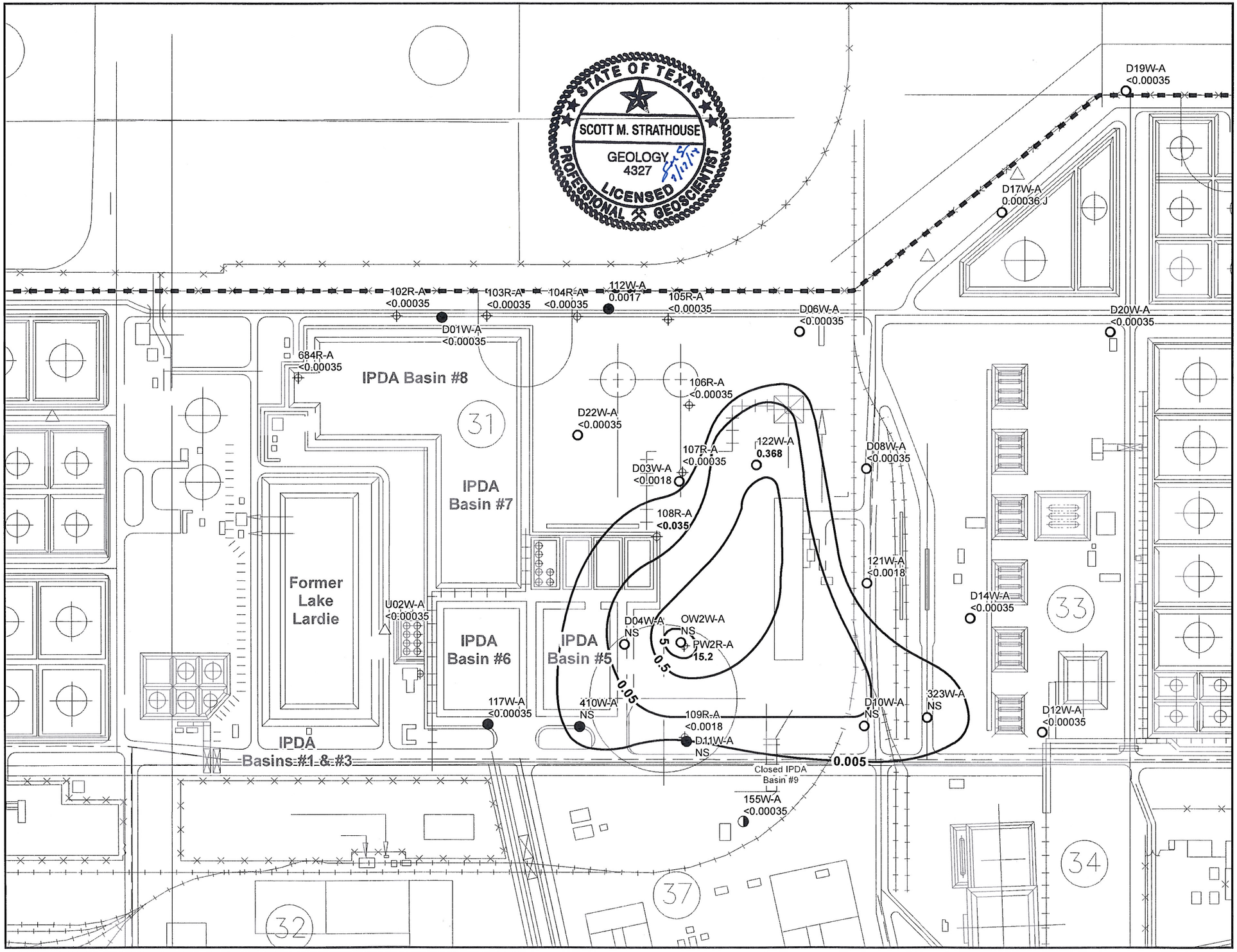
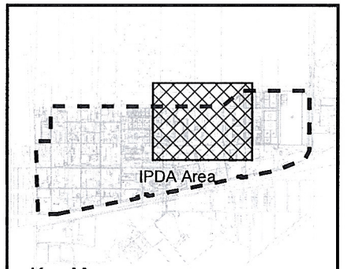
The Dow Chemical Company
Texas City Operations

June 2014

Geoscience Firm Registration No. 50264

Drawn By: CH2MHILL





Legend

- Background Well
- Corrective Action Observation Well
- POC Well
- Recovery Well
- Line of Equal Concentration (mg/L)
- Dashed where Inferred
- Basemap

Notes:
1) Wells numbers have been abbreviated to exclude man plant zone designation and date of well installation. For example, well MP31-81-D01W-A is written as D01W-A.
2) Compliance Plan monitoring wells were sampled on 01/22/14 and 01/31/14.
3) Recovery Wells were sampled on 2/27/14.
4) GWPS = 0.005 mg/
5) All results are reported in mg/L

GWPS = groundwater protection standard
NS = Not sampled due to presence of NAPL
J = Estimated Concentration
BOLD = Exceeded GWPS

0 100 200
Feet

Figure 2-1
1,2-Dichloroethane Concentration Map
1st Half 2014
In-Plant Disposal Area

Union Carbide Corporation
A Wholly Owned Subsidiary of
The Dow Chemical Company
Texas City Operations

DOW

Drawing Date: 7/17/2014

Drawn By: CH2MHILL

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STATE OF TEXAS
SCOTT M. STRATHOUSE
GEOLOGY
4327
7/17/14
LICENSED PROFESSIONAL GEOSCIENTIST

D19W-A
<0.00033

D17W-A
<0.00033

102R-A
<0.00033

103R-A
<0.00033

104R-A
<0.00033

112W-A
<0.00033

105R-A
<0.00033

D01W-A
<0.00033

D06W-A
<0.00033

D20W-A
<0.00033

684R-A
<0.00033

IPDA Basin #8

106R-A
<0.00033

D22W-A
<0.00033

107R-A
0.0456

122W-A
67.8

D08W-A
<0.00033

D03W-A
<0.0017

IPDA Basin #7

108R-A
118

121W-A
<0.0017

D14W-A
<0.00033

Former Lake Lardie

U02W-A
<0.00033

50

D04W-A
NS

OW2W-A
NS

PW2R-A
74.1

IPDA Basin #6

IPDA Basin #5

5

117W-A
<0.00033

410W-A
NS

109R-A
<0.0017

D11W-A
NS

0.5

0.05

D10W-A
NS

323W-A
NS

D12W-A
0.0066

IPDA Basins #1 & #3

Closed IPDA Basin #9

0.005

155W-A
<0.00033

31 33 34 37 32

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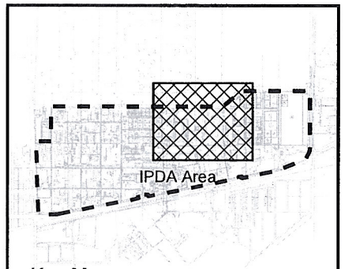

Key Map

Legend

- Background Well
- Corrective Action Observation Well
- POC Well
- Recovery Well
- Line of Equal Concentration (mg/L)
- Dashed where Inferred
- Basemap

Notes:
1) Wells numbers have been abbreviated to exclude man plant zone designation and date of well installation. For example, well MP31-81-D01W-A is written as D01W-A.
2) Compliance Plan monitoring wells were sampled on 01/22/14 and 01/31/14.
3) Recovery Wells were sampled on 2/27/14.
4) GWPS = 0.005 mg/L
5) All results are reported in mg/L

GWPS = groundwater protection standard
NS = Not sampled due to presence of NAPL
BOLD = Exceeded GWPS

0 100 200
Feet

Figure 2-2
1,2-Dichloropropane Concentration Map
1st Half 2014
In-Plant Disposal Area

Union Carbide Corporation
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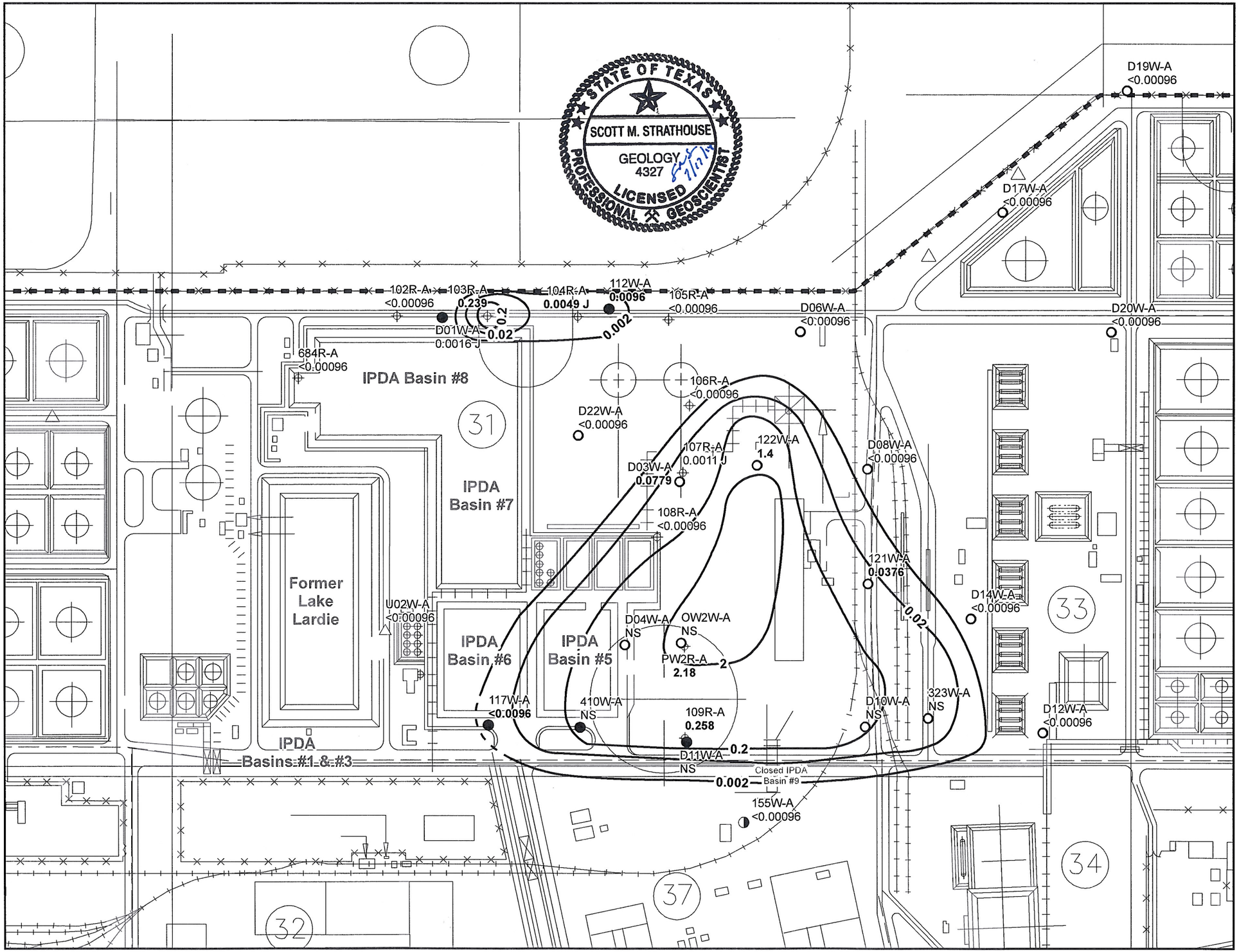
The Dow Chemical Company
Texas City Operations

Drawing Date: 7/17/2014

Drawn By: CH2MHILL



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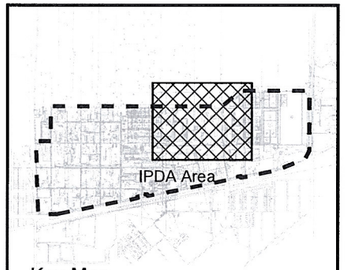

Key Map

Legend

- Background Well
- Corrective Action Observation Well
- POC Well
- Recovery Well
- Line of Equal Concentration (mg/L)
- Dashed where Inferred
- Basemap

Notes:
1) Wells numbers have been abbreviated to exclude man plant zone designation and date of well installation. For example, well MP31-81-D01W-A is written as D01W-A.
2) Compliance Plan monitoring wells were sampled on 01/22/14 and 01/31/14.
3) Recovery Wells were sampled on 2/27/14.
4) GWPS = 0.0019 mg/L
5) All results are reported in mg/L

GWPS = groundwater protection standard
NS = Not sampled due to presence of NAPL
J = Estimated Concentration
BOLD = Exceeded GWPS

0 100 200
Feet

Figure 2-3
Bis (2-chloroethyl) ether
Concentration Map
1st Half 2014
In-Plant Disposal Area

Union Carbide Corporation
A Wholly Owned Subsidiary of
The Dow Chemical Company
Texas City Operations

Drawing Date: 7/17/2014

Drawn By: CH2MHILL

STATE OF TEXAS
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4327
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PROFESSIONAL GEOSCIENTIST
7/17/14

D19W-A
<0.001

D17W-A
<0.001

102R-A
<0.001

103R-A
5.84

104R-A
0.14

112W-A
0.0012 J

105R-A
0.0055

D06W-A
0.0011 J

D20W-A
0.205

D01W-A
0.0013 J

684R-A
0.0025 J

IPDA Basin #8

31

106R-A
<0.001

D22W-A
<0.001

107R-A
<0.001

122W-A
1.62

D03W-A
0.383

D08W-A
<0.001

IPDA
Basin #7

108R-A
0.0114

121W-A
0.108

Former
Lake
Lardie

U02W-A
<0.001

D14W-A
<0.001

33

IPDA
Basin #6

IPDA
Basin #5

D04W-A
NS

OW2W-A
NS

PW2R-A
7.64

117W-A
0.428

410W-A
NS

109R-A
6.19

323W-A
NS

D12W-A
<0.001

D10W-A
NS

IPDA
Basins #1 & #3

D11W-A
NS

Closed IPDA
Basin #9

155W-A
<0.001

32

37

34

5

1.5

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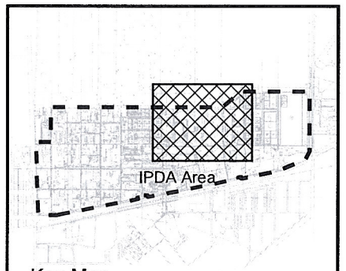

Key Map

Legend

- Background Well
- Corrective Action Observation Well
- POC Well
- Recovery Well
- Line of Equal Concentration (mg/L)
- Dashed where Inferred
- Basemap

Notes:
1) Wells numbers have been abbreviated to exclude man plant zone designation and date of well installation. For example, well MP31-81-D01W-A is written as D01W-A.
2) Compliance Plan monitoring wells were sampled on 01/22/14 and 01/31/14.
3) Recovery Wells were sampled on 2/27/14.
4) GWPS = 1.5 mg/L
5) All results are reported in mg/L

GWPS = groundwater protection standard
NS = Not sampled due to presence of NAPL
J = Estimated Concentration
BOLD = Exceeded GWPS

0 100 200
Feet

Figure 2-4
Naphthalene Concentration Map
1st Half 2014
In-Plant Disposal Area

Union Carbide Corporation
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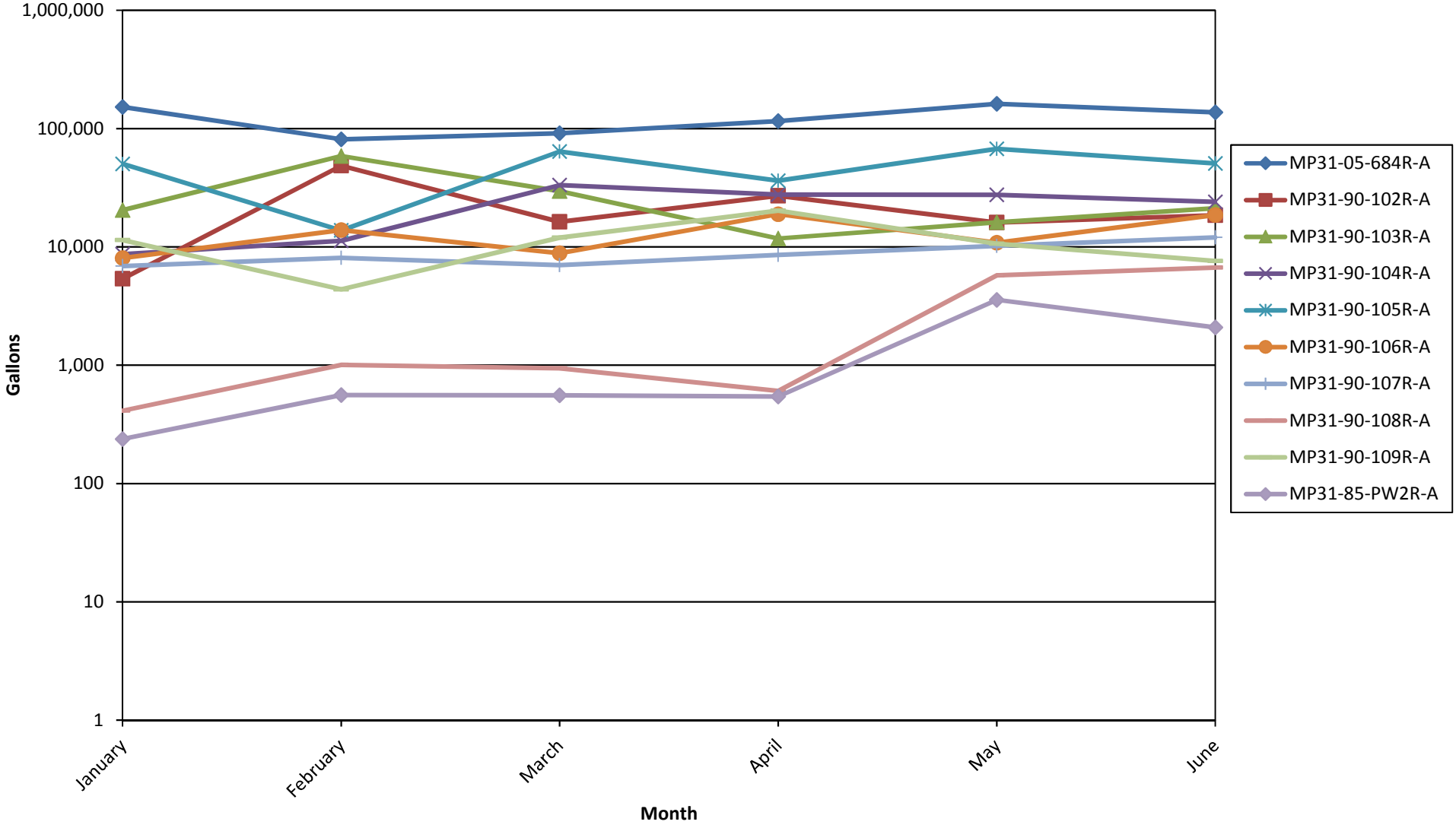
The Dow Chemical Company
Texas City Operations

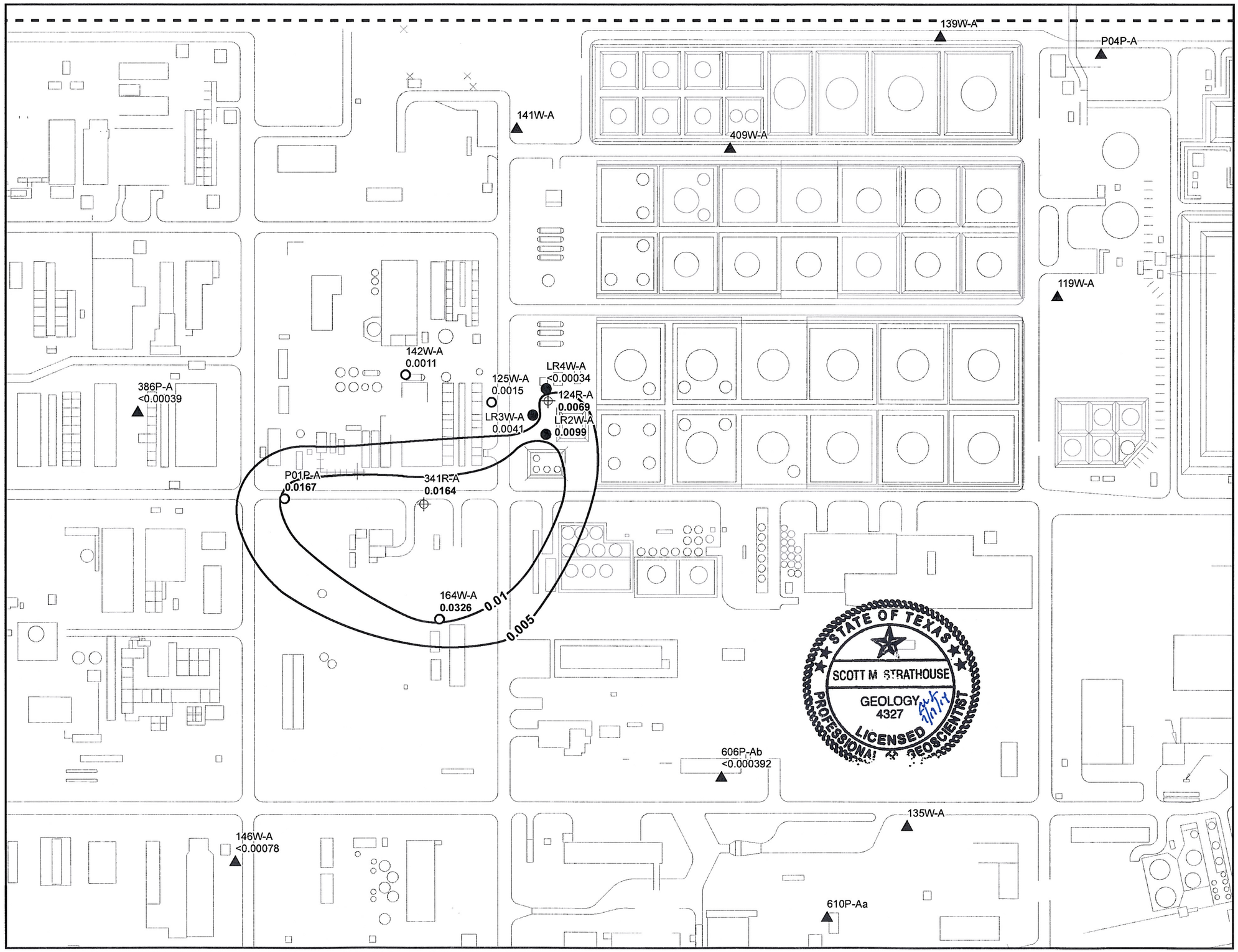
DOW

Drawing Date: 7/17/2014

Drawn By: CH2MHILL

Figure 2-5
IPDA Corrective Action System Recovery Wells
Monthly Production First Half 2014





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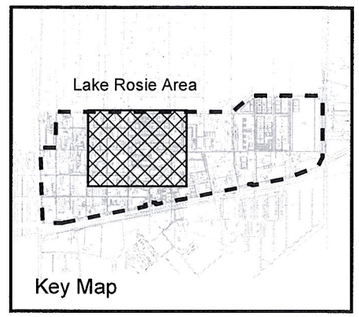


Legend

- Recovery Well
- Point of Compliance Well
- Monitoring Well Completed in Zone II
- Corrective Action Observation Well
- Line of Equal Concentration (mg/L)
- Basemap

Notes:
1) Well numbers have been abbreviated to exclude main plant zone designation and date of well installation. For example, well MP11-85-LR1W-A is written as LR1W-A.
2) Compliance Plan monitoring wells were sampled on 01/22/14 and 01/31/14.
3) Recovery Wells were sampled on 2/27/14.
4) Supplemental monitoring wells completed in the Zone II aquifer were sampled in 2008 and 2009 during the LaMarque and Lake Rosie APAR investigations to help evaluate the extent of the benzene plume presented on this map.
5) GWPS = 0.005 mg/L
6) All results are reported in mg/L

GWPS = groundwater protection standard
BOLD = Exceeded GWPS

0 100 200 Feet

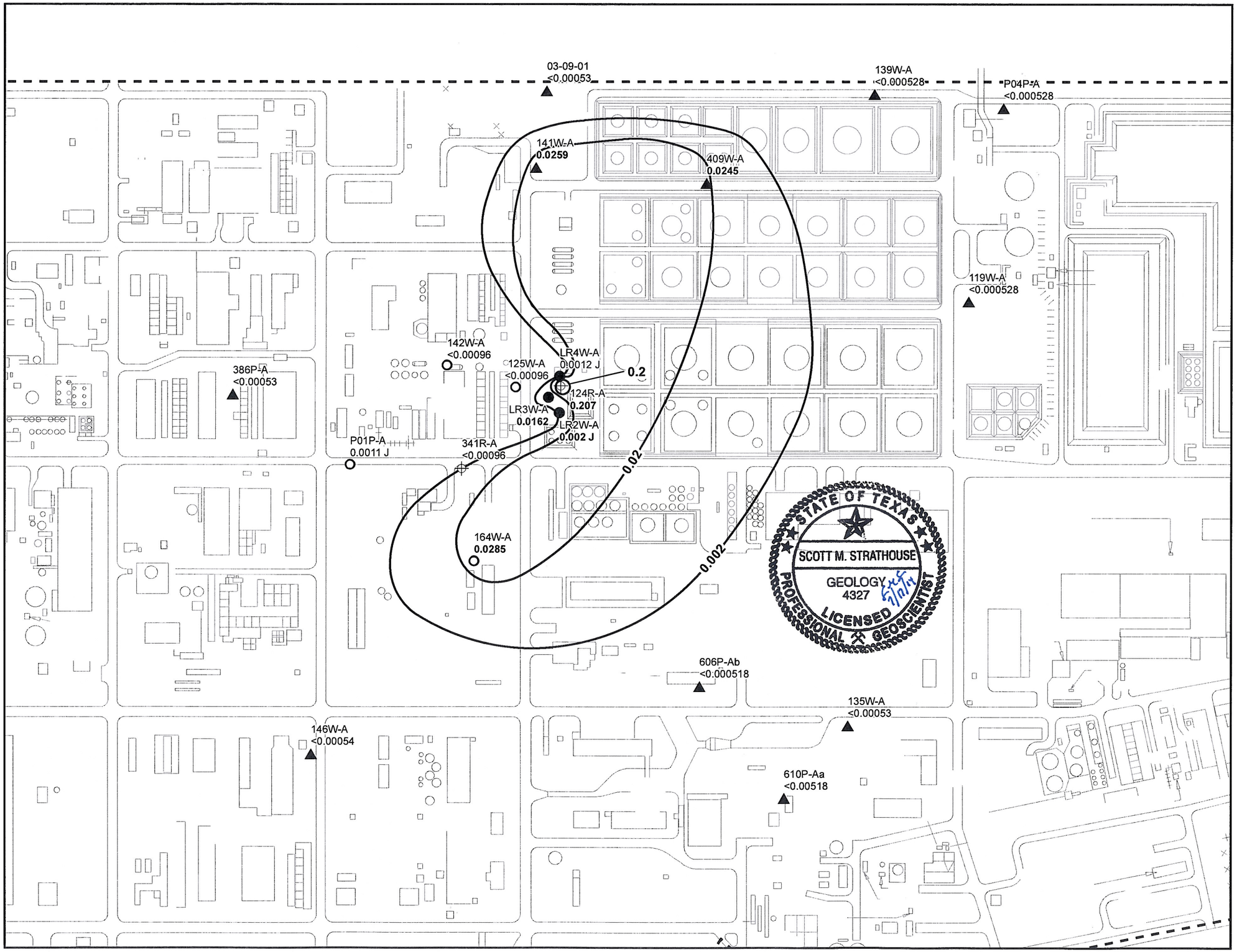
Figure 3-1
Benzene Concentration Map
1st Half 2014
Lake Rosie Area

Union Carbide Corporation
A Wholly Owned Subsidiary of
The Dow Chemical Company
Texas City Operations

DOW

Drawing Date: April 2014

Drawn By: CH2MHILL



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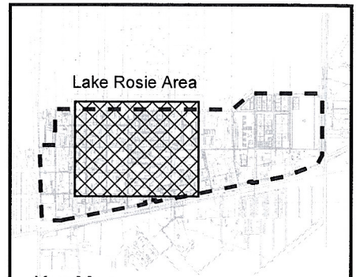


Legend

- Recovery Well
- Point of Compliance Well
- Monitoring Well Completed in Zone II
- Corrective Action Observation Well
- Line of Equal Concentration (mg/L)
- Basemap

Notes:
1) Well numbers have been abbreviated to exclude main plant zone designation and date of well installation. For example, well MP11-85-LR1W-A is written as LR1W-A.
2) Compliance Plan monitoring wells were sampled on 01/22/14 and 01/31/14.
3) Recovery Wells were sampled on 2/27/14.
4) Supplemental monitoring wells completed in the Zone II aquifer were sampled in 2008 and 2009 during the LaMarque and Lake Rosie APAR investigations to help evaluate the extent of the bis(2-chloroethyl)ether plume presented on this map.
5) GWPS = 0.0019 mg/L
6) All results are reported in mg/L

GWPS = groundwater protection standard
J = Estimated Concentration
BOLD = Exceeded GWPS

0 100 200 Feet

Figure 3-2
Bis (2-chloroethyl) ether Concentration Map
1st Half 2014
Lake Rosie Area

Union Carbide Corporation
A Wholly Owned Subsidiary of
The Dow Chemical Company
Texas City Operations

Drawing Date: April 2014

Drawn By: CH2MHILL

Figure 3-3
Lake Rosie Corrective Action System Recovery Wells
Monthly Production First Half 2014

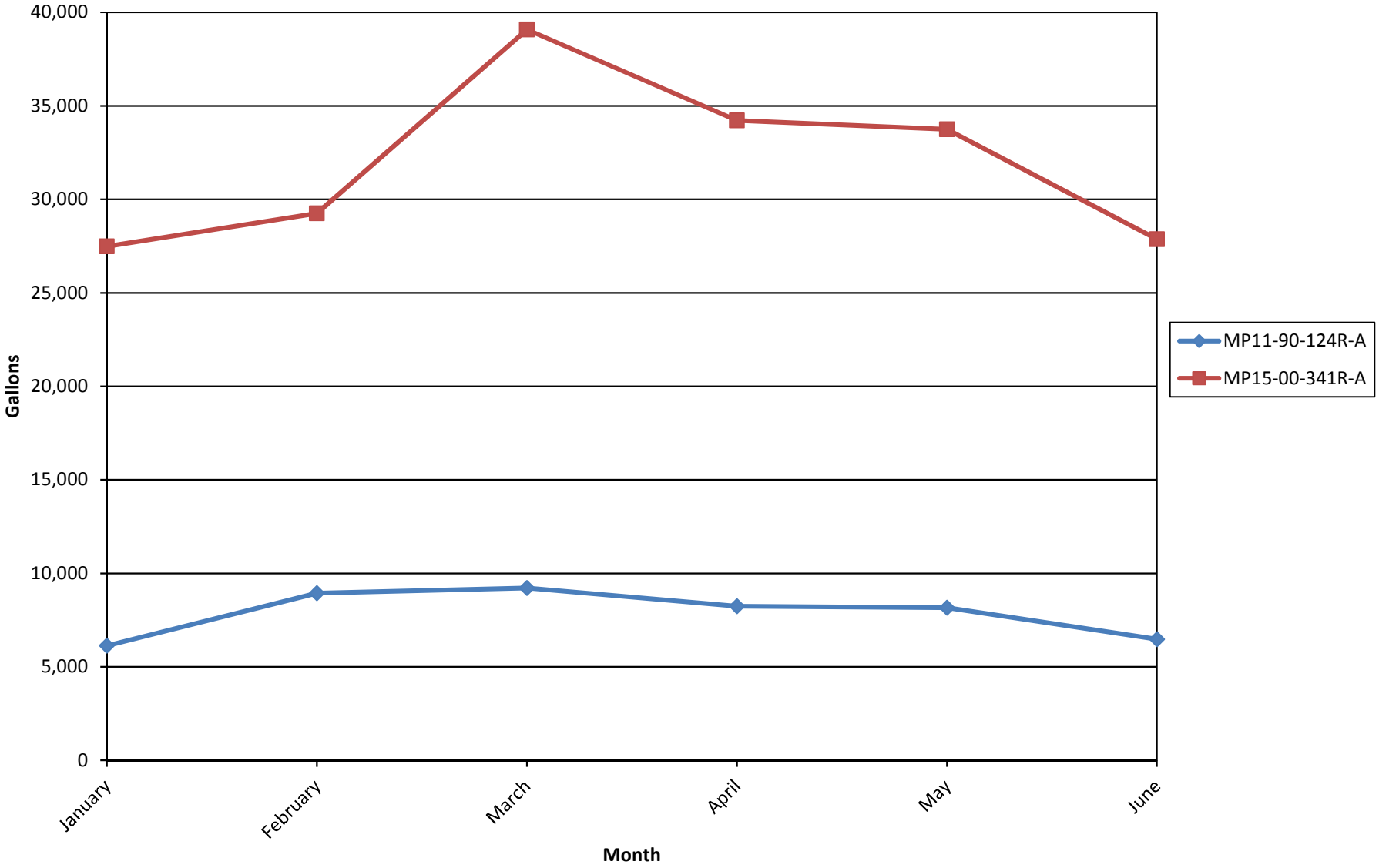
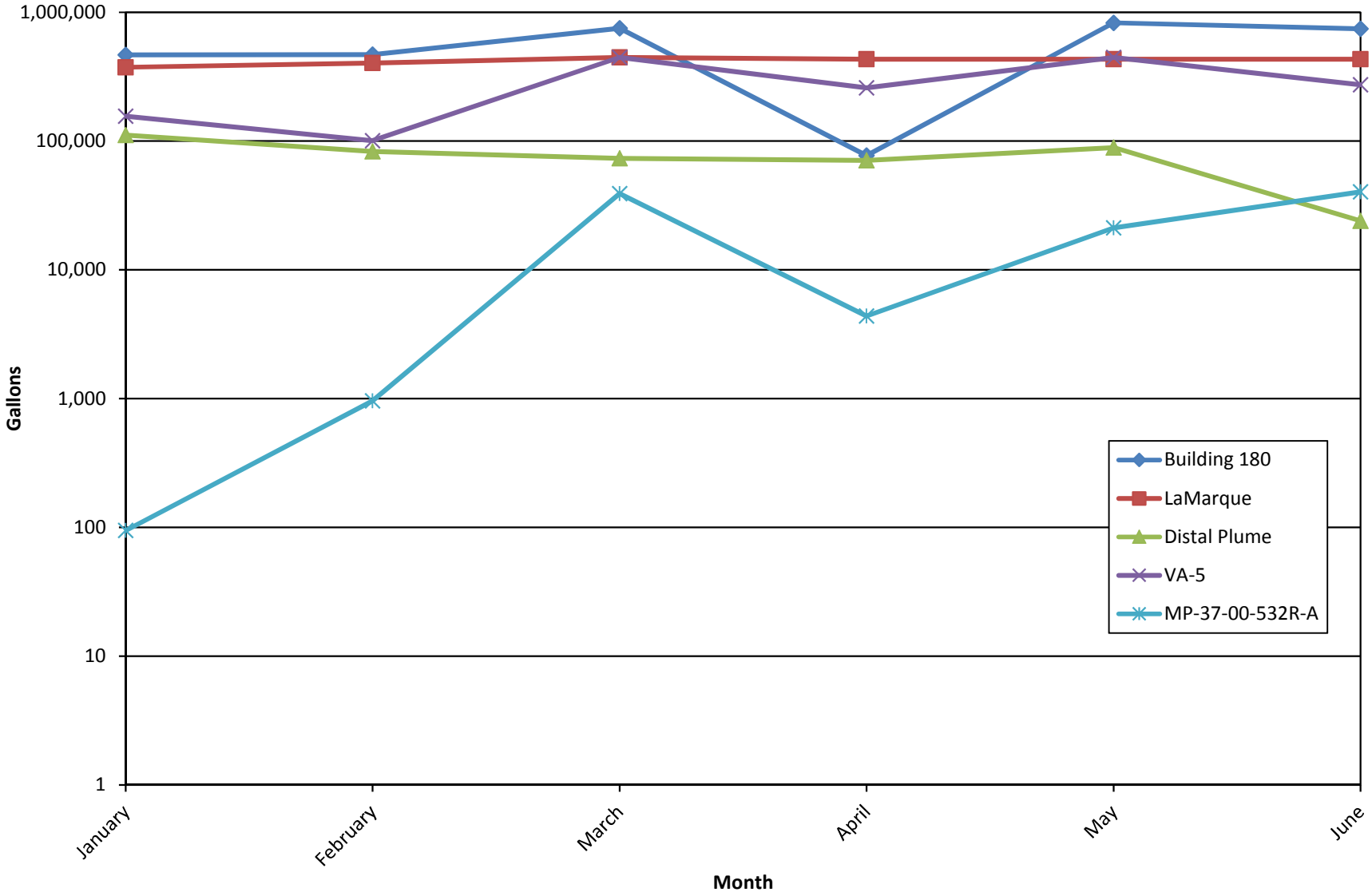


Figure 4-1
Plant-Wide Horizontal and Vertical Recovery Wells Monthly Production
First Half 2014



Tables

TABLE 1-1
Main Plant Well Designations
First Half 2014 Report

SOUTH IN-PLANT DISPOSAL AREA WMU

Point of Compliance (POC) Wells:

MP31-99-112W-A	MP31-99-410W-A	MP31-81-D01W-A	MP31-82-D11W-A
MP31-89-117W-A			

Corrective Action Observation (CAO) Wells:

MP31-89-121W-A	MP31-81-D04W-A	MP33-83-D12W-A	MP33-83-D20W-A
MP31-89-122W-A	MP31-82-D06W-A	MP33-83-D14W-A	MP31-85-D22W-A
MP33-95-323W-A	MP33-82-D08W-A	MP38-83-D17W-A	MP31-85-OW2W-A
MP31-81-D03W-A	MP31-82-D10W-A	MP38-83-D19W-A	

Background Well (BKG):

MP31-06-U02W-A

Corrective Action System (CAS) Wells:

MP31-90-102R-A	MP31-90-105R-A	MP31-90-108R-A	MP31-05-684R-A
MP31-90-103R-A	MP31-90-106R-A	MP31-90-109R-A	MP31-85-PW2R-A
MP31-90-104R-A	MP31-90-107R-A		

LAKE ROSIE WMU

Point of Compliance (POC) Wells:

MP11-85-LR2W-A	MP11-85-LR3W-A	MP11-85-LR4W-A

Corrective Action Observation (CAO) Wells:

MP10-89-125W-A	MP08-89-142W-A	MP15-91-164W-A	MP15-83-P01W-A

Background Well (BKG):

MP31-06-U02W-A

Corrective Action System (CAS) Wells:

MP11-90-124R-A	MP15-00-341R-A

TABLE 1-2
Main Plant Indicator Parameters
First Half 2014 Report

SOUTH IN-PLANT DISPOSAL AREA
Volatiles
1,2-Dichloroethane
1,2-Dichloropropane
Semivolatiles
bis (2-chloroethyl) ether
Naphthalene

LAKE ROSIE SWMU
Volatiles
Benzene
Semivolatiles
bis (2-chloroethyl) ether

TABLE 1-3
Main Plant Compliance Plan Well Changes
First Half 2014 Report

Well ID	Former Function	Current Function	Plug and Abandoned Date	Well Installation Date
MP31-90-101R-A	Recovery	NA	June-05	NA
MP07-96-385P-A	Monitor	NA	June-05	NA
MP31-05-684R-A	NA	Recovery	NA	June-05

NOTES:
NA - Not Available/Applicable

TABLE 1-4
Main Plant Compliance Plan Modifications and Amendments
First Half 2014

Compliance Plan Number:	CP-50242-000
Date First Issued:	September 5, 1989
Date Reissued:	February 7, 2005

TABLE 1-5
Compliance Schedule for Compliance Plan No. 50242
First Half 2014 Report

Routine Ongoing Activity or Report	Section #	Frequency	Start Date / Submittal Date
Activity – Inspection – For contaminated groundwater NAPL which is stored without a permit or interim status for less than 90 days the container and tank collection systems shall comply with provisions of 40 CFR Part 265 Subparts I and J.	II.D.	Weekly	1/1/05 Complete
Activity – Maintain a list of disposal methods and volume of all recovered contaminated groundwater including water purged from wells during sampling. Make this available for inspection upon request.	III.C	Ongoing	1/1/05 Records at ESEOB
Activity – Record flow rate at each recovery well once a week. Tabulate and graph flow data as required by VII.C.2.h. for submission in the semiannual report.	V.B.1.	Weekly	1/1/05 Complete
Activity – Inspection - All above ground system pipes inspected weekly for leaks and areas surrounding wells inspected weekly for visible signs of leaks in buried sections.	V.B.2.	Weekly	1/1/05 Records at ESEOB
Activity – Sampling of wells– Routine semiannual sampling to begin in 07/04.	VI.B. & C.	Semiannual during first 60 days of first and third quarters	8/26/04 Done as part of the semiannual report.
Activity – Evaluation - Complete data evaluation within 60 days of collection of last sample during semiannual sampling; use method listed in VI.D.	VI.D	Semiannual 60 days after last sample	10/25/04 Done as part of the semiannual report.
Activity – Measurement- Measure Water level relative to Mean Sea Level (MSL) to within 0.1 ft and shall be performed on all monitor wells specified in the compliance plan. Field determinations: pH, temperature and specific conductivity, turbidity, appearance.	VI.C.4	During each sampling event	1/1/05 Done as part of the semiannual report.
Activity - Evaluation - Prepare water table maps and evaluate.	VII.C.1.	Jan. 21 & July 21	1/1/05 Done as part of the semiannual report.
Report – Submit Corrective Action report to TCEQ – include all items referenced in VII.C.2. – Jan. report covers time period of July thru Dec. of previous year, and July report covers Jan. thru June of same year.	VII.C.2.	Jan. 21 & July 21	1/1/05 Records at ESEOB
Activity – Submit schedule for the proposed Affected Property Assessment Reports.	VIII.D		5/14/08 Complete Approved by TCEQ letter dated 6/27/08.
Activity- Submit APAR for LaMarque and Lake Rosie Area.	VIII.D		Jun 30, 2009. Approved by TCEQ letter dated 10/27/09.
Activity – Submit APAR for IPDA.	VIII.D		August 27, 2010. Approved by TCEQ letter dated 6/24/11.
Activity – Submit APAR for VA-5 Area.	VIII.D		October 28, 2010 Approved by TCEQ letter dated 1/26/11
Activity – Submit APAR for Southwest Corner Area.	VIII.D		APAR submitted October 4, 2013 Approved by TCEQ letter dated 1/8/2014
Activity – Permittee shall prepare and submit to the executive director an ISM status Report to evaluate the effectiveness of any ISM required by the Compliance Plan.	IX.D.4	120 day report of issuance of the compliance plan	10/30/04 Remediation submitted completed report.
Activity- The implementation of the Compliance Plan shall not exceed 180 days of this Compliance Plan.	X.C	180 days of issuance of the Compliance Plan	12/30/04 Remediation implemented Compliance Plan.
Activity – Survey well elevations.	Att.B No. 16	As determined by data evaluation Not to exceed 5 years	12/7/10 Complete

TABLE 1-6a

Main Plant Fluid Level Measurements - First Quarter 2014

First Half 2014

Abbreviated Well Number	Top of Casing Elevation (Ft. MSL)	Depth to Ground Water (Ft.TOC)	Groundwater Elevation (Ft. MSL)	Base of Well Screen (Ft.TOC)	Measured Well Depth (Ft.TOC)	Measured DNAPL Thickness (Ft.)
Shallow Monitor Wells						
MP31-99-112W-A	11.61	5.05	6.56	40.5	40.7	- - -
MP31-89-117W-A	13.51	6.93	6.58	40.1	45.8	- - -
MP31-89-118W-A	13.23	6.73	6.50	42.3	42.9	- - -
MP31-89-119W-A	13.36	6.75	6.61	37.5	38.0	- - -
MP31-89-120W-A	14.45	7.96	6.49	53.7	59.2	- - -
MP31-89-121W-A	10.25	3.78	6.47	54.6	54.8	- - -
MP31-89-122W-A	10.99	4.42	6.57	62.4	63.2	- - -
MP10-89-125W-A	9.37	3.68	5.69	26.5	32.2	- - -
MP43-89-127W-A	9.25	4.21	5.04	59.5	65.2	- - -
MP38-89-129W-A	9.66	3.68	5.98	53.2	57.6	- - -
MP34-89-131W-A	11.28	NM	NM	48.3	NM	- - -
MP37-89-132W-A	9.68	3.46	6.22	34.7	38.7	- - -
MP32-89-133W-A	12.34	6.04	6.30	62.5	68.0	- - -
MP23-89-135W-A	12.66	6.88	5.78	31.9	37.2	- - -
MP11-89-136W-A	13.85	7.32	6.53	37.5	40.5	- - -
MP31-89-137W-A	13.05	6.45	6.60	37.7	42.9	- - -
MP05-89-139W-A	11.76	5.42	6.34	57.6	62.9	- - -
MP05-89-140W-A	12.12	5.75	6.37	54.1	59.9	- - -
MP05-89-141W-A	10.66	4.38	6.28	37.7	41.0	- - -
MP08-89-142W-A	11.32	5.92	5.40	31.3	36.8	- - -
MP29-89-144W-A	12.19	7.25	4.94	35.4	40.1	- - -
MP28-89-145W-A	11.49	7.52	3.97	32.5	37.9	- - -
MP20-89-146W-A	10.68	5.68	5.00	32.6	37.7	- - -
MP14-89-147W-A	10.39	6.07	4.32	32.4	37.6	- - -
MP03-89-148W-A	10.60	4.80	5.80	34.6	37.8	- - -
MP02-89-149W-A	10.03	4.95	5.08	33.0	37.9	- - -
MP12-89-150W-A	8.67	4.74	3.93	34.8	37.5	- - -
MP26-89-152W-A	9.91	6.47	3.44	32.6	38.0	- - -
MP27-01-153P-Ab	11.02	8.27	2.75	34.0	33.0	- - -
MP07-89-154W-A	9.75	3.95	5.80	37.1	42.5	- - -
MP37-89-155W-A	10.58	4.02	6.56	36.5	56.9	- - -
MP39-89-158W-A	10.20	5.64	4.56	32.9	38.0	- - -
MP43-89-160W-A	11.84	5.79	6.05	27.8	50.4	- - -
MP15-91-164W-A	8.53	3.40	5.13	31.1	34.3	- - -
MP07-91-167W-A	10.18	5.82	4.36	32.9	38.7	- - -
MP37-91-189W-A	8.81	NM(2)	NM(2)	59.0	NM(2)	- - -
MP25-91-191W-A	13.35	9.31	4.04	62.4	65.7	- - -
MP35-91-194W-A	13.50	8.86	4.64	63.4	65.7	- - -
MP02-95-234W-Ab-R**	11.50	8.73	2.77	31.2	31.2	- - -
MP02-95-234W-Ac	11.39	8.74	2.65	56.4	56.2	- - -
MP02-95-235W-Ab	10.28	7.42	2.86	30.9	31.3	- - -
MP02-95-235W-Ac	9.99	7.20	2.79	52.2	52.3	- - -
MP02-95-236P-Aa	12.25	9.20	3.05	27.8	27.6	- - -
MP02-95-236W-Ab-R**	12.26	9.24	3.02	39.3	39.3	- - -
MP02-95-236W-Ac-R**	12.08	8.99	3.09	58.3	58.3	- - -
MP02-95-252P-A	9.78	6.21	3.57	34.7	25.1	- - -
MP02-95-253P-Aa	13.64	10.91	2.73	28.2	NM(1)	- - -
MP02-95-253P-Ab	13.38	10.42	2.96	37.9	38.6	- - -
MP02-95-253P-Ac	13.71	10.85	2.86	50.2	43.8	- - -
MP37-95-254W-A-R**	11.21	4.76	6.45	28.3	28.3	- - -
MP37-95-256P-A	8.24	1.77	6.47	24.9	24.0	- - -
MP02-95-259W-A	8.25	1.73	6.52	41.8	33.2	- - -
MP02-95-261W-A	7.75	1.64	6.11	32.7	30.8	- - -
MP37-95-269P-A	8.83	2.50	6.33	28.6	25.8	- - -
MP02-95-277P-A	10.53	8.06	2.47	31.0	31.3	- - -
MP27-95-278P-A	7.52	4.70	2.82	24.7	25.2	- - -
MP25-95-281W-A	12.64	8.58	4.06	27.7	26.9	- - -
MP33-95-323W-A	7.22	0.89	6.33	38.5	NM(3)	0.6

TABLE 1-6a

Main Plant Fluid Level Measurements - First Quarter 2014

First Half 2014

Abbreviated Well Number	Top of Casing Elevation (Ft. MSL)	Depth to Ground Water (Ft.TOC)	Groundwater Elevation (Ft. MSL)	Base of Well Screen (Ft.TOC)	Measured Well Depth (Ft.TOC)	Measured DNAPL Thickness (Ft.)
Shallow Monitor Wells						
MP02-96-355P-A	9.30	6.67	2.63	20.9	20.4	- - -
MP02-96-358P-Aa	12.46	9.60	2.86	27.8	27.1	- - -
MP02-96-360P-Aa	9.77	6.26	3.51	22.4	22.7	- - -
MP02-96-360P-Ab	9.76	6.32	3.44	35.4	35.6	- - -
MP02-96-360P-Ac	9.69	6.12	3.57	47.3	47.0	- - -
MP02-96-361P-Aa	9.57	5.74	3.83	23.6	21.2	- - -
MP02-96-361P-Ab	9.58	5.80	3.78	34.7	34.8	- - -
MP25-96-362P-Aa	10.28	6.09	4.19	27.5	26.4	- - -
MP25-96-362P-Ab	10.29	6.03	4.26	40.0	35.4	- - -
MP13-96-366P-A	10.02	6.10	3.92	32.6	32.0	- - -
MP07-96-386P-A	11.00	6.65	4.35	33.9	31.2	- - -
MP02-97-391W-Ab	8.64	6.26	2.38	42.4	42.8	- - -
MP02-97-392W-Ab	8.34	7.25	1.09	33.6	33.9	- - -
MP02-97-392W-Ac	8.08	6.88	1.20	52.5	51.8	- - -
MP02-97-397W-Ab-R**	6.61	5.74	0.87	28.4	28.4	- - -
MP02-97-399W-Ab	8.31	7.05	1.26	29.8	31.4	- - -
MP02-97-399W-Ac	8.42	6.95	1.47	52.9	52.6	- - -
MP02-97-407W-Ab	6.36	4.74	1.62	29.3	29.8	- - -
MP02-97-407W-Ac	6.23	4.58	1.65	52.1	52.0	- - -
MP02-97-408W-Ab	6.62	6.24	0.38	27.5	27.9	- - -
MP11-97-409W-A	11.79	5.32	6.47	38.5	37.5	- - -
MP31-99-410W-A	13.34	7.02	6.32	41.7	NM(3)	0.8
MP18-00-511P-Ab	6.07	2.75	3.32	27.8	27.3	- - -
MP18-00-511P-Ac	6.10	2.98	3.12	48.8	48.5	- - -
MP19-00-514P-Ab	8.05	3.49	4.56	30.1	29.5	- - -
MP19-00-514P-Ac	8.11	4.21	3.90	52.1	49.9	- - -
MP19-00-516W-Ab-R**	10.80	6.68	4.12	33.4	33.4	- - -
MP19-00-517P-Ab	6.97	3.29	3.68	29.7	28.9	- - -
MP19-00-517P-Ac	7.41	3.75	3.66	51.0	49.8	- - -
MP02-00-521W-Ab-R**	8.80	5.35	3.45	26.3	26.3	- - -
MP02-00-521P-Ac	5.83	2.45	3.38	47.9	NM(1)	- - -
MP02-00-523P-Ab	5.56	2.10	3.46	28.1	NM(1)	- - -
MP02-00-523P-Ac	5.55	2.45	3.10	48.0	47.1	- - -
MP18-00-525P-Ab	6.46	3.04	3.42	28.0	27.5	- - -
MP18-00-525P-Ac	6.41	3.25	3.16	51.9	51.4	- - -
MP02-00-526P-Ab	13.00	10.14	2.86	36.9	33.5	- - -
MP02-00-526P-Ac	13.07	10.20	2.87	57.7	54.2	- - -
MP02-00-527P-Ab	14.33	10.92	3.41	37.4	33.4	- - -
MP02-00-527P-Ac	14.36	11.34	3.02	67.6	63.5	- - -
MP02-00-528P-Ab	11.68	7.22	4.46	33.0	32.9	- - -
MP02-00-529P-Ab	12.10	8.08	4.02	33.2	31.7	- - -
MP02-00-529P-Ac	12.22	NM(1)	NM(1)	51.9	NM(1)	- - -
MP02-00-530P-Aa	14.09	11.26	2.83	27.4	23.4	- - -
MP02-00-530P-Ab	14.03	10.95	3.08	41.1	37.3	- - -
MP02-00-530P-Ac	14.08	11.04	3.04	56.9	53.0	- - -
MP02-00-531P-Aa	12.22	8.85	3.37	26.1	22.6	- - -
MP02-00-531P-Ac	11.93	8.76	3.17	49.4	52.0	- - -
MP02-00-552P-Aa	11.61	9.28	2.33	23.2	23.6	- - -
MP02-00-552P-Ac	11.75	9.51	2.24	55.0	56.9	- - -
MP19-00-559P-Ab	8.06	4.15	3.91	30.2	30.1	- - -
MP19-00-559P-Ac	8.12	4.36	3.76	50.2	50.0	- - -
MP43-00-561P-Aa	12.34	6.89	5.45	27.4	24.8	- - -
MP43-00-561P-Ab	12.24	NM(1)	NM(1)	47.5	NM(1)	- - -
MP43-00-562P-Aa	12.82	6.99	5.83	28.2	24.1	- - -
MP43-00-562P-Ab	12.76	6.99	5.77	43.1	39.1	- - -
MP43-00-563P-Aa	12.31	6.28	6.03	29.9	26.5	- - -
MP43-00-563P-Ab	11.18	5.25	5.93	44.9	41.3	- - -
MP43-00-564P-Aa	11.83	5.70	6.13	27.6	24.2	- - -

TABLE 1-6a

Main Plant Fluid Level Measurements - First Quarter 2014

First Half 2014

Abbreviated Well Number	Top of Casing Elevation (Ft. MSL)	Depth to Ground Water (Ft.TOC)	Groundwater Elevation (Ft. MSL)	Base of Well Screen (Ft.TOC)	Measured Well Depth (Ft.TOC)	Measured DNAPL Thickness (Ft.)
Shallow Monitor Wells						
MP43-00-564P-Ab	11.86	5.76	6.10	43.7	40.8	- - -
MP43-00-565P-Aa	12.04	5.85	6.19	26.5	23.3	- - -
MP43-00-565P-Ab	12.06	5.89	6.17	41.6	38.5	- - -
MP25-00-566P-Ab	13.42	9.41	4.01	32.9	19.8	- - -
MP02-00-567P-Ab	14.23	NM(1)	NM(1)	34.3	NM(1)	- - -
MP07-00-568P-Ab	12.00	7.58	4.42	34.1	34.3	- - -
MP02-01-569P-Aa	14.40	12.10	2.30	23.8	23.0	- - -
MP02-01-569P-Ab	14.28	11.96	2.32	33.6	33.8	- - -
MP02-01-569P-Ac	14.35	11.88	2.47	48.7	49.1	- - -
MP02-01-571P-Aa	11.53	9.02	2.51	23.7	23.3	- - -
MP02-01-571P-Ab	11.50	9.00	2.50	33.6	34.0	- - -
MP02-01-571P-Ac	11.54	8.98	2.56	48.7	49.1	- - -
MP02-01-572P-Ab	13.04	10.57	2.47	30.9	30.8	- - -
MP02-01-572P-Ac	13.15	10.64	2.51	49.0	49.6	- - -
MP02-01-573P-Aa	12.38	9.72	2.66	24.0	24.1	- - -
MP02-01-573P-Ac	12.37	9.64	2.73	58.9	59.3	- - -
MP02-01-574P-Ab	13.93	11.37	2.56	31.1	30.8	- - -
MP02-01-574P-Ac	13.80	11.23	2.57	51.9	52.5	- - -
MP43-01-577P-Aa	13.99	8.05	5.94	27.2	27.0	- - -
MP43-01-577P-Ab	13.93	8.00	5.93	44.1	43.1	- - -
MP43-01-578P-Aa	12.43	7.16	5.27	28.0	27.8	- - -
MP43-01-578P-Ab	12.42	7.13	5.29	41.9	42.1	- - -
MP02-01-581P-Aa	13.76	11.51	2.25	21.9	21.0	- - -
MP02-01-581P-Ab	13.84	11.61	2.23	33.9	31.6	- - -
MP02-01-582P-Aa	12.94	10.55	2.39	24.0	23.5	- - -
MP02-01-582P-Ab	12.96	10.60	2.36	36.1	35.7	- - -
MP02-01-584P-Ab	12.32	9.87	2.45	33.7	32.3	- - -
MP02-01-585P-Ab	13.77	11.46	2.31	33.8	31.9	- - -
MP02-01-585P-Ac	13.77	11.41	2.36	48.8	46.8	- - -
MP43-01-586P-Aa	10.99	5.73	5.26	28.7	28.0	- - -
MP43-01-586P-Ab	10.99	5.79	5.20	42.8	42.6	- - -
MP43-01-587P-Ab	14.02	7.59	6.43	42.0	40.4	- - -
MP02-01-588P-Ab	12.10	9.60	2.50	35.1	34.0	- - -
MP02-01-589P-Ab	12.98	10.96	2.02	34.8	34.1	- - -
MP02-01-590P-Aa	11.17	6.15	5.02	33.5	33.3	- - -
MP02-01-590P-Ab	10.98	5.95	5.03	45.0	43.8	- - -
MP02-01-593P-Aa	11.48	6.26	5.22	24.0	27.6	- - -
MP02-01-593P-Ab	11.44	6.24	5.20	39.0	41.7	- - -
MP02-01-597P-Aa	12.75	10.32	2.43	34.0	34.0	- - -
MP02-01-598P-Aa	12.57	10.15	2.42	35.0	34.9	- - -
MP02-01-599P-Aa	11.50	8.96	2.54	33.4	34.4	- - -
MP02-01-601P-Ab	12.92	10.31	2.61	35.6	34.5	- - -
MP02-01-601P-Ac	12.88	9.95	2.93	47.6	49.3	- - -
MP19-01-602P-Ab	11.07	7.09	3.98	31.8	32.1	- - -
MP19-01-602P-Ac	10.65	7.59	3.06	53.3	55.3	- - -
MP19-01-603P-Ab	11.02	7.39	3.63	31.7	32.5	- - -
MP19-01-603P-Ac	11.06	7.44	3.62	55.8	57.0	- - -
MP16-01-606P-Aa	13.60	7.68	5.92	26.7	16.5	- - -
MP16-01-606P-Ab	13.56	7.70	5.86	36.7	37.4	- - -
MP16-01-606P-Ac	13.52	8.25	5.27	51.7	51.0	- - -
MP23-01-610P-Aa	10.92	5.50	5.42	24.8	25.7	- - -
MP23-01-610P-Ac	10.97	5.55	5.42	46.9	48.1	- - -
MP02-01-614P-Aa	10.55	5.45	5.10	27.1	27.0	- - -
MP02-01-614P-Ab	10.42	5.31	5.11	37.9	38.8	- - -
MP26-01-618W-Aa-R**	6.41	2.95	3.46	25.4	25.4	- - -
MP26-01-618P-Ac	6.39	2.48	3.91	48.9	47.7	- - -

TABLE 1-6a

Main Plant Fluid Level Measurements - First Quarter 2014

First Half 2014

Abbreviated Well Number	Top of Casing Elevation (Ft. MSL)	Depth to Ground Water (Ft.TOC)	Groundwater Elevation (Ft. MSL)	Base of Well Screen (Ft.TOC)	Measured Well Depth (Ft.TOC)	Measured DNAPL Thickness (Ft.)
Shallow Monitor Wells						
MP26-01-619P-Aa	6.41	2.99	3.42	25.9	25.5	- - -
MP26-01-619P-Ab	6.54	3.71	2.83	42.0	41.3	- - -
MP27-01-621P-Aa	12.35	8.96	3.39	33.6	33.4	- - -
MP27-01-621P-Ac	12.36	9.51	2.85	53.5	52.8	- - -
MP02-02-642P-A	13.53	10.14	3.39	36.0	36.0	- - -
MP02-02-643P-A	13.89	11.61	2.28	37.0	37.3	- - -
MP02-02-644P-A	13.12	10.80	2.32	34.0	33.9	- - -
MP27-03-652P-Aa	10.71	7.10	3.61	29.0	27.4	- - -
MP27-03-652P-Ab	10.47	6.89	3.58	39.3	39.3	- - -
MP02-04-654P-A	9.95	4.01	5.94	30.2	33.9	- - -
MP02-04-655P-Aa	5.33	0.89	4.44	28.2	27.3	- - -
MP02-04-655P-Ab	5.42	0.95	4.47	41.1	40.3	- - -
MP02-04-656P-Aa	10.45	5.15	5.30	30.1	33.1	- - -
MP02-04-656P-Ab	10.87	5.56	5.31	42.3	45.2	- - -
MP02-04-659P-Aa	5.61	1.25	4.36	28.5	27.7	- - -
MP02-04-659P-Ab	5.63	1.24	4.39	42.8	42.0	- - -
MP02-04-660P-Aa	10.82	5.34	5.48	35.0	34.9	- - -
MP02-04-660P-Ab	10.76	5.80	4.96	45.6	45.5	- - -
MP02-04-661P-Ab	5.01	1.35	3.66	40.2	39.9	- - -
MP02-04-662P-Aa	9.39	4.49	4.90	25.7	25.6	- - -
MP02-04-662P-Ab	9.28	4.42	4.86	40.1	40.0	- - -
MP02-04-663P-Aa	6.86	2.41	4.45	29.3	28.6	- - -
MP02-04-663P-Ab	6.83	2.16	4.67	44.2	44.1	- - -
MP39-05-677P-Ab	9.97	4.93	5.04	40.9	40.7	- - -
MP02-05-685P-Aa	6.54	1.70	4.84	23.1	22.8	- - -
MP02-05-685P-Ab	6.58	1.72	4.86	37.3	37.1	- - -
MP02-05-686P-Aa	9.20	4.43	4.77	25.0	25.0	- - -
MP02-05-686P-Ab	9.18	4.45	4.73	39.9	38.6	- - -
MP37-09-690W-A	11.02	4.33	6.69	39.8	40.3	- - -
MP02-11-693W-A	12.71	8.98	3.73	38.0	39.3	- - -
MP18-12-694W-A	8.49	5.08	3.41	28.1	28.1	- - -
MP02-12-P695-Aa	7.82	3.22	4.60	38.0	39.2	- - -
MP02-12-P695-Ab	7.77	3.24	4.53	47.0	47.9	- - -
MP02-12-P696-Aa	9.67	4.90	4.77	31.8	32.8	- - -
MP02-12-P696-Ab	9.86	4.98	4.88	49.9	52.4	- - -
MP02-12-P697-Aa	6.60	2.46	4.14	28.6	28.7	- - -
MP02-12-P697-Ab	6.79	2.35	4.44	47.9	48.5	- - -
MP31-81-D01W-A	12.98	6.70	6.28	53.0	49.6	- - -
MP31-81-D03W-A	10.93	4.33	6.60	50.2	50.8	- - -
MP31-81-D04W-A	19.39	13.33	6.06	57.5	NM(3)	4.6
MP31-82-D06W-A	12.07	5.32	6.75	23.3	28.6	- - -
MP33-82-D08W-A	11.72	5.13	6.59	41.2	39.8	- - -
MP31-82-D10W-A	10.48	4.14	6.34	40.9	NM(3)	0.01
MP31-82-D11W-A	11.70	5.32	6.38	42.8	NM(3)	1.6
MP33-83-D12W-A	9.23	2.85	6.38	39.5	44.9	- - -
MP33-83-D14W-A	9.49	3.05	6.44	44.9	48.5	- - -
MP33-83-D15W-A	8.89	2.39	6.50	39.8	45.0	- - -
MP38-83-D17W-A	9.52	3.00	6.52	38.2	43.3	- - -
MP34-83-D18W-A	10.29	3.81	6.48	37.2	40.5	- - -
MP38-83-D19W-A	9.99	3.71	6.28	47.5	52.6	- - -
MP33-83-D20W-A	8.27	1.96	6.31	46.1	51.1	- - -
MP31-85-D22W-A	11.43	5.08	6.35	34.6	32.4	- - -
MP11-85-LR1	10.07	4.09	5.98	24.4	27.1	- - -
MP11-85-LR2	10.06	4.14	5.92	23.4	26.0	- - -
MP11-85-LR3	10.30	4.41	5.89	24.4	26.5	- - -
MP11-85-LR4	9.70	3.78	5.92	34.7	35.8	- - -
MP11-85-LR5	9.88	3.97	5.91	23.5	26.3	- - -

TABLE 1-6a

Main Plant Fluid Level Measurements - First Quarter 2014

First Half 2014

Abbreviated Well Number	Top of Casing Elevation (Ft. MSL)	Depth to Ground Water (Ft.TOC)	Groundwater Elevation (Ft. MSL)	Base of Well Screen (Ft.TOC)	Measured Well Depth (Ft.TOC)	Measured DNAPL Thickness (Ft.)
Shallow Monitor Wells						
MP31-85-OW2W-A	11.23	5.94	5.29	31.2	NM(3)	0.2
MP15-83-P01P-A	10.46	5.80	4.66	22.1	24.0	- - -
MP31-83-P04P-A	12.28	5.74	6.54	19.8	15.8	- - -
MP33-83-P08P-A	9.09	2.54	6.55	22.0	21.3	- - -
MP39-83-P10P-A	8.80	2.93	5.87	20.0	21.0	- - -
MP11-85-P12P-A	10.06	4.21	5.85	21.6	23.1	- - -
MP11-85-P13P-A	10.02	4.09	5.93	21.7	23.8	- - -
MP31-81-U01W-A	14.44	7.89	6.55	40.1	38.6	- - -
MP31-06-U02W-A	14.15	7.59	6.56	39.1	34.2	- - -
Deep Monitor Wells						
MP11-89-126W-B	9.31	12.36	-3.05	132.1	134.8	- - -
MP31-89-156W-B	14.21	17.63	-3.42	137.1	140.8	- - -
MP31-89-157W-B	14.54	17.73	-3.19	135.8	141.5	- - -
MP31-85-D21W-B	10.99	14.55	-3.56	137.0	138.4	- - -
Recovery Wells						
MP31-90-102R-A	10.94	20.55	-9.61	52.5	58.8	- - -
MP31-90-103R-A	11.03	18.80	-7.77	55.2	66.2	- - -
MP31-90-104R-A	9.98	19.10	-9.12	40.2	61.2	- - -
MP31-90-105R-A	9.70	16.74	-7.04	35.9	42.7	- - -
MP31-90-106R-A	10.50	17.28	-6.78	35.3	41.8	- - -
MP31-90-107R-A	10.41	17.65	-7.24	49.6	54.6	- - -
MP31-90-108R-A	9.51	17.75	-8.24	48.6	55.9	- - -
MP31-90-109R-A	10.38	19.90	-9.52	49.0	55.0	- - -
MP11-90-123R-A	8.88	NM	NM	29.6	NM	- - -
MP11-90-124R-A	8.30	22.50	-14.20	36.2	41.7	- - -
MP15-00-341R-A	8.85	NM	NM	32.7	NM	- - -
MP37-00-532R-A	9.15	NM	NM	41.8	NM	- - -
MP31-05-684R-A	12.94	21.18	-8.24	33.0	38.0	- - -
MP31-85-PW2R-A	10.98	20.28	-9.30	34.8	36.8	- - -

NOTES:

Water levels measured on March 3, 2014

NM - Not Measured

NM(1) - Not measured - obstruction in monitoring well

NM(2) - Not measured - monitoring well not accessible

NM(3) - Not measured - DNAPL in well

** - Well replaced July 2013

Ft - Feet

MSL - Mean Sea Level

TOC - Top of Casing

TABLE 1-6b

Main Plant Fluid Level Measurements - Second Quarter 2014

First Half 2014

Abbreviated Well Number	Top of Casing Elevation (Ft. MSL)	Depth to Ground Water (Ft.TOC)	Groundwater Elevation (Ft. MSL)	Base of Well Screen (Ft.TOC)	Measured Well Depth (Ft.TOC)	Measured DNAPL Thickness (Ft.)
Shallow Monitor Wells						
MP31-99-112W-A	11.61	6.95	4.66	40.5	40.7	- - -
MP31-89-117W-A	13.51	8.26	5.25	40.1	45.8	- - -
MP31-89-118W-A	13.23	8.28	4.95	42.3	42.9	- - -
MP31-89-119W-A	13.36	8.38	4.98	37.5	38.0	- - -
MP31-89-120W-A	14.45	9.72	4.73	53.7	59.2	- - -
MP31-89-121W-A	10.25	5.30	4.95	54.6	54.8	- - -
MP31-89-122W-A	10.99	6.23	4.76	62.4	63.2	- - -
MP10-89-125W-A	9.37	4.44	4.93	26.5	32.2	- - -
MP43-89-127W-A	9.25	6.61	2.64	59.5	65.2	- - -
MP38-89-129W-A	9.66	5.23	4.43	53.2	57.6	- - -
MP34-89-131W-A	11.28	NM	NM	48.3	NM	- - -
MP37-89-132W-A	9.68	5.23	4.45	34.7	38.7	- - -
MP32-89-133W-A	12.34	7.78	4.56	62.5	68.0	- - -
MP23-89-135W-A	12.66	8.04	4.62	31.9	37.2	- - -
MP11-89-136W-A	13.85	8.88	4.97	37.5	40.5	- - -
MP31-89-137W-A	13.05	8.04	5.01	37.7	42.9	- - -
MP05-89-139W-A	11.76	6.82	4.94	57.6	62.9	- - -
MP05-89-140W-A	12.12	7.09	5.03	54.1	59.9	- - -
MP05-89-141W-A	10.66	5.56	5.10	37.7	41.0	- - -
MP08-89-142W-A	11.32	6.54	4.78	31.3	36.8	- - -
MP29-89-144W-A	12.19	7.89	4.30	35.4	40.10	- - -
MP28-89-145W-A	11.49	8.15	3.34	32.5	37.9	- - -
MP20-89-146W-A	10.68	6.19	4.49	32.6	37.7	- - -
MP14-89-147W-A	10.39	6.59	3.80	32.4	37.6	- - -
MP03-89-148W-A	10.60	5.61	4.99	34.6	37.8	- - -
MP02-89-149W-A	10.03	6.74	3.29	33.0	37.9	- - -
MP12-89-150W-A	8.67	5.74	2.93	34.8	37.5	- - -
MP26-89-152W-A	9.91	7.71	2.20	32.6	38.0	- - -
MP27-01-153P-Ab	11.02	9.28	1.74	34.0	33.0	- - -
MP07-89-154W-A	9.75	4.74	5.01	37.1	42.5	- - -
MP37-89-155W-A	10.58	5.32	5.26	36.5	56.9	- - -
MP39-89-158W-A	10.20	7.23	2.97	32.9	38.0	- - -
MP43-89-160W-A	11.84	6.99	4.85	27.8	50.4	- - -
MP15-91-164W-A	8.53	3.93	4.60	31.1	34.3	- - -
MP07-91-167W-A	10.18	6.28	3.90	32.9	38.7	- - -
MP37-91-189W-A	8.81	3.72	NM[2]	59.0	NM[2]	- - -
MP25-91-191W-A	13.35	11.86	1.49	62.4	65.7	- - -
MP35-91-194W-A	13.50	11.18	2.32	63.4	65.7	- - -
MP02-95-234W-Ab-R**	11.50	9.80	1.70	31.2	31.2	- - -
MP02-95-234W-Ac	11.39	9.89	1.50	56.4	56.2	- - -
MP02-95-235W-Ab	10.28	9.17	1.11	30.9	31.3	- - -
MP02-95-235W-Ac	9.99	8.91	1.08	52.2	52.3	- - -
MP02-95-236P-Aa	12.25	11.46	0.79	27.8	27.6	- - -
MP02-95-236W-Ab-R**	12.26	11.51	0.75	39.3	39.3	- - -
MP02-95-236W-Ac-R**	12.08	11.19	0.89	58.3	58.3	- - -
MP02-95-252P-A	9.78	8.37	1.41	34.7	25.1	- - -
MP02-95-253P-Aa	13.64	12.63	1.01	28.2	NM	- - -
MP02-95-253P-Ab	13.38	12.35	1.03	37.9	38.6	- - -
MP02-95-253P-Ac	13.71	12.74	0.97	50.2	43.8	- - -
MP37-95-254W-A-R**	11.21	6.61	4.60	28.3	28.3	- - -
MP37-95-256P-A	8.24	3.78	4.46	24.9	24.0	- - -
MP02-95-259W-A	8.25	4.45	3.80	41.8	33.2	- - -
MP02-95-261W-A	7.75	4.20	3.55	32.7	30.8	- - -
MP37-95-269P-A	8.83	4.58	4.25	28.6	25.8	- - -
MP02-95-277P-A	10.53	9.42	1.11	31.0	31.3	- - -
MP27-95-278P-A	7.52	NM[2]	NM[2]	24.7	25.2	- - -
MP25-95-281W-A	12.64	11.04	1.60	27.7	26.9	- - -
MP33-95-323W-A	7.22	2.15	5.07	38.5	NM[3]	0.8

TABLE 1-6b

Main Plant Fluid Level Measurements - Second Quarter 2014

First Half 2014

Abbreviated Well Number	Top of Casing Elevation (Ft. MSL)	Depth to Ground Water (Ft.TOC)	Groundwater Elevation (Ft. MSL)	Base of Well Screen (Ft.TOC)	Measured Well Depth (Ft.TOC)	Measured DNAPL Thickness (Ft.)
Shallow Monitor Wells						
MP02-96-355P-A	9.30	8.22	1.08	20.9	20.4	- - -
MP02-96-358P-Aa	12.46	11.49	0.97	27.8	27.1	- - -
MP02-96-360P-Aa	9.77	8.85	0.92	22.4	22.7	- - -
MP02-96-360P-Ab	9.76	8.78	0.98	35.4	35.6	- - -
MP02-96-360P-Ac	9.69	8.62	1.07	47.3	47.0	- - -
MP02-96-361P-Aa	9.57	8.23	1.34	23.6	21.2	- - -
MP02-96-361P-Ab	9.58	8.23	1.35	34.7	34.8	- - -
MP25-96-362P-Aa	10.28	8.58	1.70	27.5	26.4	- - -
MP25-96-362P-Ab	10.29	8.59	1.70	40.0	35.4	- - -
MP13-96-366P-A	10.02	6.70	3.32	32.6	32.0	- - -
MP07-96-386P-A	11.00	7.15	3.85	33.9	31.2	- - -
MP02-97-391W-Ab	8.64	8.21	0.43	42.4	42.8	- - -
MP02-97-392W-Ab	8.34	8.74	-0.40	33.6	33.9	- - -
MP02-97-392W-Ac	8.08	8.30	-0.22	52.5	51.8	- - -
MP02-97-397W-Ab-R**	6.61	7.04	-0.43	28.4	28.4	- - -
MP02-97-399W-Ab	8.31	8.55	-0.24	29.8	31.4	- - -
MP02-97-399W-Ac	8.42	8.28	0.14	52.9	52.6	- - -
MP02-97-407W-Ab	6.36	6.49	-0.13	29.3	29.8	- - -
MP02-97-407W-Ac	6.23	6.30	-0.07	52.1	52.0	- - -
MP02-97-408W-Ab	6.62	7.10	-0.48	27.5	27.9	- - -
MP11-97-409W-A	11.79	6.71	5.08	38.5	37.5	- - -
MP31-99-410W-A	13.34	8.19	5.15	41.7	NM(3)	0.6
MP18-00-511P-Ab	6.07	3.64	2.43	27.8	27.3	- - -
MP18-00-511P-Ac	6.10	3.49	2.61	48.8	48.5	- - -
MP19-00-514P-Ab	8.05	4.80	3.25	30.1	29.5	- - -
MP19-00-514P-Ac	8.11	5.11	3.00	52.1	49.9	- - -
MP19-00-516W-Ab-R**	10.80	7.11	3.69	33.4	33.40	- - -
MP19-00-517P-Ab	6.97	3.58	3.39	29.7	28.9	- - -
MP19-00-517P-Ac	7.41	4.29	3.12	51.0	49.8	- - -
MP02-00-521W-Ab-R**	8.80	6.89	1.91	26.3	26.30	- - -
MP02-00-521P-Ac	5.83	3.72	2.11	47.9	NM(1)	- - -
MP02-00-523P-Ab	5.56	3.75	1.81	28.1	NM(1)	- - -
MP02-00-523P-Ac	5.55	3.65	1.90	48.0	47.1	- - -
MP18-00-525P-Ab	6.46	3.50	2.96	28.0	27.5	- - -
MP18-00-525P-Ac	6.41	4.10	2.31	51.9	51.4	- - -
MP02-00-526P-Ab	13.00	11.80	1.20	36.9	33.5	- - -
MP02-00-526P-Ac	13.07	11.71	1.36	57.7	54.2	- - -
MP02-00-527P-Ab	14.33	12.91	1.42	37.4	33.4	- - -
MP02-00-527P-Ac	14.36	12.18	2.18	67.6	63.5	- - -
MP02-00-528P-Ab	11.68	9.17	2.51	33.0	32.9	- - -
MP02-00-529P-Ab	12.10	9.97	2.13	33.2	31.7	- - -
MP02-00-529P-Ac	12.22	NM(1)	NM(1)	51.9	NM(1)	- - -
MP02-00-530P-Aa	14.09	12.80	1.29	27.4	23.4	- - -
MP02-00-530P-Ab	14.03	12.56	1.47	41.1	37.3	- - -
MP02-00-530P-Ac	14.08	12.54	1.54	56.9	53.0	- - -
MP02-00-531P-Aa	12.22	10.63	1.59	26.1	22.6	- - -
MP02-00-531P-Ac	11.93	10.27	1.66	49.4	52.0	- - -
MP02-00-552P-Aa	11.61	10.77	0.84	23.2	23.6	- - -
MP02-00-552P-Ac	11.75	10.55	1.20	55.0	56.9	- - -
MP19-00-559P-Ab	8.06	4.86	3.20	30.2	30.1	- - -
MP19-00-559P-Ac	8.12	5.08	3.04	50.2	50.0	- - -
MP43-00-561P-Aa	12.34	9.31	3.03	27.4	24.8	- - -
MP43-00-561P-Ab	12.24	NM(1)	NM(1)	47.5	NM(1)	- - -
MP43-00-562P-Aa	12.82	9.85	2.97	28.2	24.1	- - -
MP43-00-562P-Ab	12.76	9.79	2.97	43.1	39.1	- - -
MP43-00-563P-Aa	12.31	9.05	3.26	29.9	26.5	- - -
MP43-00-563P-Ab	11.18	7.75	3.43	44.9	41.3	- - -
MP43-00-564P-Aa	11.83	8.39	3.44	27.6	24.2	- - -

TABLE 1-6b

Main Plant Fluid Level Measurements - Second Quarter 2014

First Half 2014

Abbreviated Well Number	Top of Casing Elevation (Ft. MSL)	Depth to Ground Water (Ft.TOC)	Groundwater Elevation (Ft. MSL)	Base of Well Screen (Ft.TOC)	Measured Well Depth (Ft.TOC)	Measured DNAPL Thickness (Ft.)
Shallow Monitor Wells						
MP43-00-564P-Ab	11.86	8.39	3.47	43.7	40.8	- - -
MP43-00-565P-Aa	12.04	8.16	3.88	26.5	23.3	- - -
MP43-00-565P-Ab	12.06	8.21	3.85	41.6	38.5	- - -
MP25-00-566P-Ab	13.42	12.18	1.24	32.9	19.8	- - -
MP02-00-567P-Ab	14.23	NM(1)	NM(1)	34.3	NM(1)	- - -
MP07-00-568P-Ab	12.00	8.09	3.91	34.1	34.3	- - -
MP02-01-569P-Aa	14.40	13.38	1.02	23.8	23.0	- - -
MP02-01-569P-Ab	14.28	13.25	1.03	33.6	33.8	- - -
MP02-01-569P-Ac	14.35	13.14	1.21	48.7	49.1	- - -
MP02-01-571P-Aa	11.53	10.48	1.05	23.7	23.3	- - -
MP02-01-571P-Ab	11.50	10.45	1.05	33.6	34.0	- - -
MP02-01-571P-Ac	11.54	10.30	1.24	48.7	49.1	- - -
MP02-01-572P-Ab	13.04	11.98	1.06	30.9	30.8	- - -
MP02-01-572P-Ac	13.15	11.94	1.21	49.0	49.6	- - -
MP02-01-573P-Aa	12.38	11.32	1.06	24.0	24.1	- - -
MP02-01-573P-Ac	12.37	10.89	1.48	58.9	59.3	- - -
MP02-01-574P-Ab	13.93	12.91	1.02	31.1	30.8	- - -
MP02-01-574P-Ac	13.80	12.53	1.27	51.9	52.5	- - -
MP43-01-577P-Aa	13.99	9.70	4.29	27.2	27.0	- - -
MP43-01-577P-Ab	13.93	9.73	4.20	44.1	43.1	- - -
MP43-01-578P-Aa	12.43	9.89	2.54	28.0	27.8	- - -
MP43-01-578P-Ab	12.42	9.87	2.55	41.9	42.1	- - -
MP02-01-581P-Aa	13.76	12.81	0.95	21.9	21.0	- - -
MP02-01-581P-Ab	13.84	12.96	0.88	33.9	31.6	- - -
MP02-01-582P-Aa	12.94	12.03	0.91	24.0	23.5	- - -
MP02-01-582P-Ab	12.96	NM(1)	NM(1)	36.1	35.7	- - -
MP02-01-584P-Ab	12.32	11.42	0.90	33.7	32.3	- - -
MP02-01-585P-Ab	13.77	13.14	0.63	33.8	31.9	- - -
MP02-01-585P-Ac	13.77	12.74	1.03	48.8	46.8	- - -
MP43-01-586P-Aa	10.99	8.44	2.55	28.7	28.0	- - -
MP43-01-586P-Ab	10.99	8.47	2.52	42.8	42.6	- - -
MP43-01-587P-Ab	14.02	9.36	4.66	42.0	40.4	- - -
MP02-01-588P-Ab	12.10	11.06	1.04	35.1	34.0	- - -
MP02-01-589P-Ab	12.98	12.32	0.66	34.8	34.1	- - -
MP02-01-590P-Aa	11.17	9.04	2.13	33.5	33.3	- - -
MP02-01-590P-Ab	10.98	8.81	2.17	45.0	43.8	- - -
MP02-01-593P-Aa	11.48	9.15	2.33	24.0	27.6	- - -
MP02-01-593P-Ab	11.44	9.12	2.32	39.0	41.7	- - -
MP02-01-597P-Aa	12.75	11.87	0.88	34.0	34.0	- - -
MP02-01-598P-Aa	12.57	11.81	0.76	35.0	34.9	- - -
MP02-01-599P-Aa	11.50	10.52	0.98	33.4	34.4	- - -
MP02-01-601P-Ab	12.92	11.77	1.15	35.6	34.5	- - -
MP02-01-601P-Ac	12.88	11.42	1.46	47.6	49.3	- - -
MP19-01-602P-Ab	11.07	8.22	2.85	31.8	32.1	- - -
MP19-01-602P-Ac	10.65	8.04	2.61	53.3	55.3	- - -
MP19-01-603P-Ab	11.02	7.98	3.04	31.7	32.5	- - -
MP19-01-603P-Ac	11.06	8.32	2.74	55.8	57.0	- - -
MP16-01-606P-Aa	13.60	9.08	4.52	26.7	16.5	- - -
MP16-01-606P-Ab	13.56	9.10	4.46	36.7	37.4	- - -
MP16-01-606P-Ac	13.52	9.22	4.30	51.7	51.0	- - -
MP23-01-610P-Aa	10.92	7.20	3.72	24.8	25.7	- - -
MP23-01-610P-Ac	10.97	6.72	4.25	46.9	48.1	- - -
MP02-01-614P-Aa	10.55	8.76	1.79	27.1	27.0	- - -
MP02-01-614P-Ab	10.42	8.65	1.77	37.9	38.8	- - -
MP26-01-618W-Aa-R**	6.41	3.86	2.55	25.4	25.4	- - -
MP26-01-618P-Ac	6.39	4.29	2.10	48.9	47.7	- - -

TABLE 1-6b

Main Plant Fluid Level Measurements - Second Quarter 2014

First Half 2014

Abbreviated Well Number	Top of Casing Elevation (Ft. MSL)	Depth to Ground Water (Ft.TOC)	Groundwater Elevation (Ft. MSL)	Base of Well Screen (Ft.TOC)	Measured Well Depth (Ft.TOC)	Measured DNAPL Thickness (Ft.)
Shallow Monitor Wells						
MP26-01-619P-Aa	6.41	4.11	2.30	25.9	25.5	- - -
MP26-01-619P-Ab	6.54	4.69	1.85	42.0	41.3	- - -
MP27-01-621P-Aa	12.35	9.84	2.51	33.6	33.4	- - -
MP27-01-621P-Ac	12.36	10.38	1.98	53.5	52.8	- - -
MP02-02-642P-A	13.53	12.42	1.11	36.0	36.0	- - -
MP02-02-643P-A	13.89	12.80	1.09	37.0	37.3	- - -
MP02-02-644P-A	13.12	12.25	0.87	34.0	33.9	- - -
MP27-03-652P-Aa	10.71	7.81	2.90	29.0	27.4	- - -
MP27-03-652P-Ab	10.47	7.65	2.82	39.3	39.3	- - -
MP02-04-654P-A	9.95	6.58	3.37	30.2	33.9	- - -
MP02-04-655P-Aa	5.33	4.51	0.82	28.2	27.3	- - -
MP02-04-655P-Ab	5.42	4.53	0.89	41.1	40.3	- - -
MP02-04-656P-Aa	10.45	8.34	2.11	30.1	33.1	- - -
MP02-04-656P-Ab	10.87	8.75	2.12	42.3	45.2	- - -
MP02-04-659P-Aa	5.61	4.67	0.94	28.5	27.7	- - -
MP02-04-659P-Ab	5.63	4.69	0.94	42.8	42.0	- - -
MP02-04-660P-Aa	10.82	8.65	2.17	35.0	34.9	- - -
MP02-04-660P-Ab	10.76	8.55	2.21	45.6	45.5	- - -
MP02-04-661P-Ab	5.01	4.33	0.68	40.2	39.9	- - -
MP02-04-662P-Aa	9.39	7.92	1.47	25.7	25.6	- - -
MP02-04-662P-Ab	9.28	7.84	1.44	40.1	40.0	- - -
MP02-04-663P-Aa	6.86	4.85	2.01	29.3	28.6	- - -
MP02-04-663P-Ab	6.83	4.83	2.00	44.2	44.1	- - -
MP39-05-677P-Ab	9.97	7.08	2.89	40.9	40.7	- - -
MP02-05-685P-Aa	6.54	4.35	2.19	23.1	22.8	- - -
MP02-05-685P-Ab	6.58	4.44	2.14	37.3	37.1	- - -
MP02-05-686P-Aa	9.20	7.75	1.45	25.0	25.0	- - -
MP02-05-686P-Ab	9.18	7.80	1.38	39.9	38.6	- - -
MP37-09-690W-A	11.02	5.89	5.13	39.8	40.3	- - -
MP02-11-693W-A	12.71	10.70	2.01	38.0	39.3	- - -
MP18-12-694W-A	8.49	5.85	2.64	28.1	28.1	- - -
MP02-12-P695-Aa	7.82	6.52	1.30	38.0	39.2	- - -
MP02-12-P695-Ab	7.77	6.48	1.29	47.0	47.9	- - -
MP02-12-P696-Aa	9.67	7.19	2.48	31.8	32.8	- - -
MP02-12-P696-Ab	9.86	7.28	2.58	49.9	52.4	- - -
MP02-12-P697-Aa	6.60	4.02	2.58	28.6	28.7	- - -
MP02-12-P697-Ab	6.79	3.61	3.18	47.9	48.5	- - -
MP31-81-D01W-A	12.98	8.32	4.66	53.0	49.6	- - -
MP31-81-D03W-A	10.93	6.11	4.82	50.2	50.8	- - -
MP31-81-D04W-A	19.39	14.50	4.89	57.5	NM(3)	4.8
MP31-82-D06W-A	12.07	7.37	4.70	23.3	28.6	- - -
MP33-82-D08W-A	11.72	6.93	4.79	41.2	39.8	- - -
MP31-82-D10W-A	10.48	5.25	5.23	40.9	NM(3)	0.01
MP31-82-D11W-A	11.70	6.39	5.31	42.8	NM(3)	1.4
MP33-83-D12W-A	9.23	4.13	5.10	39.5	44.9	- - -
MP33-83-D14W-A	9.49	4.40	5.09	44.9	48.5	- - -
MP33-83-D15W-A	8.89	4.00	4.89	39.8	45.0	- - -
MP38-83-D17W-A	9.52	4.50	5.02	38.2	43.3	- - -
MP34-83-D18W-A	10.29	5.26	5.03	37.2	40.5	- - -
MP38-83-D19W-A	9.99	5.70	4.29	47.5	52.6	- - -
MP33-83-D20W-A	8.27	3.28	4.99	46.1	51.1	- - -
MP31-85-D22W-A	11.43	6.88	4.55	34.6	32.4	- - -
MP11-85-LR1	10.07	5.12	4.95	24.4	27.1	- - -
MP11-85-LR2	10.06	5.08	4.98	23.4	26.0	- - -
MP11-85-LR3	10.30	5.32	4.98	24.4	26.5	- - -
MP11-85-LR4	9.70	4.67	5.03	34.7	35.8	- - -
MP11-85-LR5	9.88	4.92	4.96	23.5	26.3	- - -

TABLE 1-6b

Main Plant Fluid Level Measurements - Second Quarter 2014

First Half 2014

Abbreviated Well Number	Top of Casing Elevation (Ft. MSL)	Depth to Ground Water (Ft.TOC)	Groundwater Elevation (Ft. MSL)	Base of Well Screen (Ft.TOC)	Measured Well Depth (Ft.TOC)	Measured DNAPL Thickness (Ft.)
Shallow Monitor Wells						
MP31-85-OW2W-A	11.23	6.43	4.80	31.2	NM(3)	0.2
MP15-83-P01P-A	10.46	6.23	4.23	22.1	24.0	- - -
MP31-83-P04P-A	12.28	7.63	4.65	19.8	15.8	- - -
MP33-83-P08P-A	9.09	4.18	4.91	22.0	21.3	- - -
MP39-83-P10P-A	8.80	4.91	3.89	20.0	21.0	- - -
MP11-85-P12P-A	10.06	5.09	4.97	21.6	23.1	- - -
MP11-85-P13P-A	10.02	4.99	5.03	21.7	23.8	- - -
MP31-81-U01W-A	14.44	9.49	4.95	40.1	38.6	- - -
MP31-06-U02W-A	14.15	9.06	5.09	39.1	34.2	- - -
Deep Monitor Wells						
MP11-89-126W-B	9.31	12.45	-3.14	132.1	134.8	- - -
MP31-89-156W-B	14.21	17.80	-3.59	137.1	140.8	- - -
MP31-89-157W-B	14.54	17.90	-3.36	135.8	141.5	- - -
MP31-85-D21W-B	10.99	14.72	-3.73	137.0	138.4	- - -
Recovery Wells						
MP31-90-102R-A	10.94	20.19	-9.25	52.5	58.8	- - -
MP31-90-103R-A	11.03	18.63	-7.60	55.2	66.2	- - -
MP31-90-104R-A	9.98	20.05	-10.07	40.2	61.2	- - -
MP31-90-105R-A	9.70	17.62	-7.92	35.9	42.7	- - -
MP31-90-106R-A	10.50	17.49	-6.99	35.3	41.8	- - -
MP31-90-107R-A	10.41	17.49	-7.08	49.6	54.6	- - -
MP31-90-108R-A	9.51	17.85	-8.34	48.6	55.9	- - -
MP31-90-109R-A	10.38	20.16	-9.78	49.0	55.0	- - -
MP11-90-123R-A	8.88	NM	NM	29.6	NM	- - -
MP11-90-124R-A	8.30	21.45	-13.15	36.2	41.7	- - -
MP15-00-341R-A	8.85	NM	NM	32.7	NM	- - -
MP37-00-532R-A	9.15	NM	NM	41.8	NM	- - -
MP31-05-684R-A	12.94	21.40	-8.46	33.0	38.0	- - -
MP31-85-PW2R-A	10.98	20.04	-9.06	34.8	36.8	- - -

NOTES:

Water levels measured on May 9, 2014.

NM - Not Measured

NM(1) - Not measured - obstruction in monitoring well

NM(2) - Not measured - monitoring well not accessible

NM(3) - Not measured - DNAPL in well

* - New well installed April 2014

** - Well replaced July 2013

Ft - Feet

MSL - Mean Sea Level

TOC - Top of Casing

TABLE 1-7
Main Plant Quarterly DNAPL Recovery
First Half 2014 Report

Well ID	Well Diameter (in)	1st Quarter (03-03-2014)		2nd Quarter (05-09-2014)	
		DNAPL Thickness (ft)/Vol (gal)	DNAPL Removed (gal)	DNAPL Thickness (ft)/Vol (gal)	DNAPL Removed (gal)
MP33-95-323W-A	2	0.60/0.10	0.05	0.80/0.13	0.06
MP31-99-410W-A	2	0.80/0.13	Trace	0.60/0.10	Trace
MP31-81-D04W-A	4	4.60/3.00	1.80	4.80/3.13	1.80
MP31-82-D10W-A	4	0.01/0.01	Trace	0.01/0.01	Trace
MP31-82-D11W-A	4	1.60/1.04	0.60	1.40/0.91	0.50
MP31-85-OW2W-A	2	0.20/0.03	0.02	0.20/0.03	0.02
Subtotal DNAPL Recovered (gal)		**1st Quarter**	2.47	**2nd Quarter**	2.38
				DNAPL Total from Monitoring Wells (gal)	4.85
				Recovery Well DNAPL total (MP31-90-108R A, MP31-85-PW2R A, and MP37-00-532R A)	117
				Semiannual Total DNAPL Recovered (gal)	122

NOTES:
DNAPL volumes calculated using 1.5" casing = 0.10 gal/ft, 2" casing = 0.17 gal/ft, 4" casing 0.66 gal/ft
DNAPL removed with peristaltic pump and disposed in UCC-supplied, labeled waste drums at the Main Plant Facility

TABLE 1-8
Main Plant Groundwater Flow Data
First Half 2014 Report

Location	Transmissivity (cm^2/s)	Saturated Thickness (cm)	1st Quarter 2014		2nd Quarter 2014	
			Hydraulic Gradient (unitless)	Velocity (cm/s)	Hydraulic Gradient (unitless)	Velocity (cm/s)
North	0.001	600	0.003	1.7E-08	0.004	2.3E-08
South	0.97	1500	0.001	2.2E-06	0.002	5.2E-06

Below is an example:
Groundwater velocities were calculated using the formula, V = ([(T/b)*i]/Ne), where:

K = Permeability = T/b = Transmissivity/Saturated Thickness;
Ne = Effective Porosity = 0.30; and
i = Hydraulic Gradient.

$$V = \left(\frac{\left\{ \frac{T\ cm^2}{sec} \right\} b\ cm}{Ne} * i\ ft/ft \right)$$

NOTES:
Transmissivity was calculated based on a hydraulic conductivity obtained from the pumping test on several wells in the plant.
See "Summary Report Highway 146 Groundwater investigations, 1998".
Hydraulic gradients taken from potentiometric surface contour maps (Figure 1-5a and Figure 1-5b).

TABLE 2-1
Analytical Results for IPDA Corrective Action System Wells
First Half 2014 Report

Well ID		MP31-90-102R-A	MP31-90-103R-A	MP31-90-104R-A	MP31-90-105R-A	MP31-90-106R-A
Well Function		**CAS**	**CAS**	**CAS**	**CAS**	**CAS**
Does well meet GWPS?		**Y**	**N**	**N**	**Y**	**Y**
Parameter (mg/L)	**GWPS**					
Volatiles						
1,2-Dichloroethane	0.005	<0.00035	<0.00035	<0.00035	<0.00035	<0.00035
1,2-Dichloropropane	0.005	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033
Semivolatiles						
bis(2-chloroethyl)ether	0.0019	<0.00096	**0.239**	**0.0049 J**	<0.00096	<0.00096
Naphthalene	1.5	<0.001	**5.84**	0.14	0.0055	<0.001

NOTES:
GWPS - Groundwater Protection Standards from Table IV of Compliance Plan No. 50242 effective February 7, 2005
CAS - Corrective Action System Well
CAS wells were sampled on February 27, 2014
Bolded values exceed the GWPS
Y - All groundwater concentrations meet the GWPS
N - One or more groundwater concentrations exceed the GWPS
mg/L - milligrams per liter
J - Estimated Concentration
< - Less than the sample detection limit

TABLE 2-1 (continued)
Analytical Results for IPDA Corrective Action System Wells
First Half 2014 Report

Well ID		MP31-90-107R-A	MP31-90-108R-A	MP31-90-109R-A	MP31-05-684R-A	MP31-85-PW2R-A
Well Function		**CAS**	**CAS**	**CAS**	**CAS**	**CAS**
Does well meet GWPS?		**N**	**N**	**N**	**Y**	**N**
Parameter (mg/L)	**GWPS**					
Volatiles						
1,2-Dichloroethane	0.005	<0.00035	**<0.035**	<0.0018	<0.00035	**15.2**
1,2-Dichloropropane	0.005	**0.0456**	**118**	<0.0017	<0.00033	**74.1**
Semivolatiles						
bis(2-chloroethyl)ether	0.0019	0.0011 J	<0.00096	**0.258**	<0.00096	**2.18**
Naphthalene	1.5	<0.001	0.0114	**6.19**	0.0025 J	**7.64**

NOTES:
GWPS - Groundwater Protection Standards from Table IV of Compliance Plan No. 50242 effective February 7, 2005
CAS - Corrective Action System Well
CAS wells were sampled on February 27, 2014
Bolded values exceed the GWPS
Y - All groundwater concentrations meet the GWPS
N - One or more groundwater concentrations exceed the GWPS
mg/L - milligrams per liter
J - Estimated Concentration
< - Less than the sample detection limit

TABLE 2-2

Analytical Results for IPDA Corrective Action Observation Wells

First Half 2014 Report

Well ID		MP31-81-D03W-A	MP31-81-D04W-A	MP31-82-D06W-A	MP31-82-D10W-A	MP31-85-D22W-A	MP31-85-OW2W-A
Well Function		**CAO**	**CAO**	**CAO**	**CAO**	**CAO**	**CAO**
Does well meet GWPS?		**N**	**N**	**Y**	**N**	**Y**	**N**
Parameter (mg/L)	**GWPS**						
Volatiles							
1,2-Dichloroethane	0.005	<0.0018	NS(1)	<0.00035	NS(1)	<0.00035	NS(1)
1,2-Dichloropropane	0.005	<0.0017	NS(1)	<0.00033	NS(1)	<0.00033	NS(1)
Semivolatiles							
bis(2-chloroethyl)ether	0.0019	**0.0779**	NS(1)	<0.00096	NS(1)	<0.00096	NS(1)
Naphthalene	1.5	0.383	NS(1)	0.0011 J	NS(1)	<0.001	NS(1)
Field Parameters							
pH (S.U.)	NA	6.94	NS(1)	7.29	NS(1)	6.95	NS(1)
Temperature (°C)	NA	21.3	NS(1)	18	NS(1)	22.4	NS(1)
SC (µS/cm)	NA	1,911	NS(1)	1,649	NS(1)	1,654	NS(1)

NOTES:
GWPS - Groundwater Protection Standards from Table IV of Compliance Plan No. 50242 effective February 7, 2005
All samples collected January 22, 2014
CAO - Corrective Action Observation Well
(1) Not sampled due to the presence of DNAPL
Bolded values exceed the GWPS
Y - All groundwater concentrations meet GWPS
N - One or more groundwater concentrations exceeds GWPS
NA - Not Available/Applicable
NS - Not Sampled
mg/L - milligrams per liter
S.U. - Standard Units
SC - Specific Conductivity (microSiemens/centimeter, [mS/cm])
J - Estimated Concentration
< - Less than the sample detection limit

TABLE 2-2 (continued)
Analytical Results for IPDA Corrective Action Observation Wells
First Half 2014 Report

Well ID		MP38-83-D17W-A	MP38-83-D19W-A	MP47-95-323W-A
Well Function		**CAO**	**CAO**	**CAO**
Does well meet GWPS?		**Y**	**Y**	**N**
Parameter (mg/L)	**GWPS**			
Volatiles				
1,2-Dichloroethane	0.005	0.00036 J	<0.00035	NS(1)
1,2-Dichloropropane	0.005	<0.00033	<0.00033	NS(1)
Semivolatiles				
bis(2-chloroethyl)ether	0.0019	<0.00096	<0.00096	NS(1)
Naphthalene	1.5	<0.001	<0.001	NS(1)
Field Parameters				
pH (S.U.)	NA	6.68	6.44	NS(1)
Temperature (°C)	NA	20.9	22.6	NS(1)
SC (µS/cm)	NA	1,775	3,830	NS(1)

NOTES:
GWPS - Groundwater Protection Standards from Table IV of Compliance Plan No. 50242 effective February 7, 2005
All samples collected January 22, 2014
CAO - Corrective Action Observation Well
(1) Not sampled due to the presence of DNAPL
Bolded values exceed the GWPS.
Y - All groundwater concentrations meet GWPS.
N - One or more groundwater concentrations exceeds GWPS
NA - Not Available/Applicable
NS - Not Sampled
mg/L - milligrams per liter
S.U. - Standard Units
SC - Specific Conductivity (microSiemens/centimeter, [mS/cm])
J - Estimated Concentration
< - Less than the sample detection limit

TABLE 2-2 (continued)
Analytical Results for IPDA Corrective Action Observation Wells
First Half 2014 Report

Well ID		MP31-89-121W-A	MP31-89-122W-A	MP33-82-D08W-A	MP33-83-D12W-A	MP33-83-D14W-A	MP33-83-D20W-A
Well Function		**CAO**	**CAO**	**CAO**	**CAO**	**CAO**	**CAO**
Does well meet GWPS?		**N**	**N**	**Y**	**N**	**Y**	**Y**
Parameter (mg/L)	**GWPS**						
Volatiles							
1,2-Dichloroethane	0.005	<0.0018	**0.368**	<0.00035	<0.00035	<0.00035	<0.00035
1,2-Dichloropropane	0.005	<0.0017	**67.8**	<0.00033	**0.0066**	<0.00033	<0.00033
Semivolatiles							
bis(2-chloroethyl)ether	0.0019	**0.0376**	**1.4**	<0.00096	<0.00096	<0.00096	<0.00096
Naphthalene	1.5	0.108	**1.62**	<0.001	<0.001	<0.001	0.205
Field Parameters							
pH (S.U.)	NA	6.72	6.4	6.89	7.68	6.78	6.71
Temperature (°C)	NA	22.2	24.9	22.9	23	21.9	19.7
SC (µS/cm)	NA	2,560	3,280	2,550	536	2,400	2,700

NOTES:
GWPS - Groundwater Protection Standards from Table IV of Compliance Plan No. 50242 effective February 7, 2005
All samples collected January 22, 2014
CAO - Corrective Action Observation Well
(1) Not sampled due to the presence of DNAPL
Bolded values exceed the GWPS.
Y - All groundwater concentrations meet GWPS.
N - One or more groundwater concentrations exceeds GWPS
NA - Not Available/Applicable
NS - Not Sampled
mg/L - milligrams per liter
S.U. - Standard Units
SC - Specific Conductivity (microSiemens/centimeter, [mS/cm])
J - Estimated Concentration
< - Less than the sample detection limit

TABLE 2-3

Analytical Results for IPDA Background and Point of Compliance Wells

First Half 2014 Report

Well ID		MP31-99-112W-A	MP31-89-117W-A	MP31-99-410W-A	MP31-81-D01W-A	MP31-82-D11W-A	MP31-06-U02W-A	MP37-89-155W-A
Well Function		**POC**	**POC**	**POC**	**POC**	**POC**	**BKG**	**(a)**
Does well meet GWPS?		**N**	**Y**	**N**	**Y**	**N**	**Y**	**Y**
Parameter (mg/L)	**GWPS**							
Volatiles								
1,2-Dichloroethane	0.005	0.0017	<0.00035	NS(1)	<0.00035	NS(1)	<0.00035	<0.00035
1,2-Dichloropropane	0.005	<0.00033	<0.00033	NS(1)	<0.00033	NS(1)	<0.00033	<0.00033
Semivolatiles								
bis(2-chloroethyl)ether	0.0019	**0.0096**	**<0.0096**	NS(1)	0.0016 J	NS(1)	<0.00096	<0.00096
Naphthalene	1.5	0.0012 J	0.428	NS(1)	0.0013 J	NS(1)	<0.001	<0.001
Field Parameters								
pH (S.U.)	NA	7.02	7.28	NS(1)	7.03	NS(1)	6.9	7.28
Temperature (°C)	NA	22.6	23	NS(1)	22.5	NS(1)	21.9	23.4
SC (µS/cm)	NA	2,470	866	NS(1)	1,506	NS(1)	891	1,039

NOTES:

GWPS - Groundwater Protection Standards from Table IV of Compliance Plan No. 50242 effective February 7, 2005

IPDA POC wells were sampled on January 22, 2014

POC - Point of Compliance Well

BKG - Background Well

(a) Additional Non-Compliance Plan Well (West of POC)

(1) Not sampled due to the presence of DNAPL.

Bolded values exceed the GWPS.

Y - All groundwater concentrations meet the GWPS

N - One or more groundwater concentrations exceed the GWPS

NA - Not Applicable

NS - Not Sampled

mg/L - milligrams per liter

S.U. - Standard Units

SC - Specific Conductivity (microSiemens/centimeter, [µS/cm])

J - Estimated Concentration

< - Less than the sample detection limit

TABLE 2-4

Detected Analytical Results for IPDA Corrective Action System - Effluent

First Half 2014 Report

Parameter		IPDA Effluent (mg/L)
Volatiles		
	1,2-Dichloropropane	50.1
	Benzene	6.32
	Ethylbenzene	0.799
	Toluene	3.64
	1,2,3-Trichloropropane	0.0444 J
	Xylene (total)	1.03
Semivolatiles		
	None Detected	

NOTES:

Only detected compounds are reported.

IPDA Corrective Action System Effluent sampled on February 27, 2014

J - Estimated Concentration

mg/L - milligrams per liter

TABLE 2-5

Monthly Totals of Recovered Groundwater from IPDA CAS Wells and Mass Contaminants Removed

First Half 2014 Report

	MP31-90-102R-A	MP31-90-103R-A	MP31-90-104R-A	MP31-90-105R-A	MP31-90-106R-A
January	5,386	20,471	8,671	50,388	8,049
February	48,583	58,652	11,267	13,799	13,892
March	16,297	29,634	33,284	64,212	8,841
1st Quarter	70,266	108,757	53,222	128,399	30,782
April	27,128	11,778	27,749	36,222	18,910
May	16,112	16,139	27,583	67,460	10,871
June	18,502	21,271	24,030	50,919	18,593
2nd Quarter	61,742	49,188	79,362	154,601	48,374
Recovered Groundwater (gallons)	132,008	157,946	132,585	282,999	79,156
Total Indicator VOCs & SVOCs (mg/L)	0.003	6.080	0.146	0.007	0.003
Mass Contaminants Removed (lbs)	0.00	8.02	0.16	0.02	0.00

Notes:

removal of VOCs & SVOCs for each recovery well.

VOCs - Volatile Organic Compounds

SVOCs - Semivolatile Organic Compounds

mg/L - milligrams per liter

lbs - pounds

TABLE 2-5 (continued)

Monthly Totals of Recovered Groundwater from IPDA CAS Wells and Mass Contaminants Removed

First Half 2014 Report

	MP31-90-107R-A	MP31-90-108R-A	MP31-90-109R-A	MP31-05-684R-A	MP31-85-PW2R-A
January	6,893	413	11,431	152,789	238
February	8,090	1,007	4,380	81,309	560
March	7,010	940	11,994	91,424	558
1st Quarter	21,993	2,359	27,805	325,522	1,356
April	8,560	608	20,260	115,665	544
May	10,181	5,758	10,651	161,872	3,572
June	12,032	6,683	7,620	137,678	2,089
2nd Quarter	30,773	13,048	38,531	415,215	6,204
Recovered Groundwater (gallons)	52,767	15,408	66,336	740,737	7,560
Total Indicator VOCs & SVOCs (mg/L)	0.048	118	6.45	0.004	99.1
Mass Contaminants Removed (lbs)	0.02	15.20	3.58	0.03	6.26

Notes:

removal of VOCs & SVOCs for each recovery well.

VOCs - Volatile Organic Compounds

SVOCs - Semivolatile Organic Compounds

mg/L - milligrams per liter

lbs - pounds

TABLE 3-1
Analytical Results for Lake Rosie Corrective Action System Wells
First Half 2014 Report

	Well ID	MP33-95-341R-A	MP11-90-124R-A
	Well Function	CAS	CAS
	Does well meet GWPS?	N	N
Parameter (mg/L)	**GWPS**		
Volatiles			
Benzene	0.005	**0.0164**	**0.0069**
Semivolatiles			
bis(2-chloroethyl)ether	0.0019	<0.00096	**0.207**

NOTES:

GWPS - Groundwater Protection Standards from Table IV of Compliance Plan No. 50242 effective February 7, 2005

All samples collected February 27, 2014

Bolded values exceed the GWPS

Y - All groundwater concentrations meet the GWPS.

N - One or more groundwater concentrations exceed the GWPS

CAS - Corrective Action System Well

mg/L - milligrams per liter

< - Less than the sample detection limit

TABLE 3-2
Analytical Results for Lake Rosie Corrective Action Observation Wells
First Half 2014 Report

Well ID		MP10-89-125W-A	MP08-89-142W-A	MP15-91-164W-A	MP15-83-P01P-A
Well Function		CAO	CAO	CAO	CAO
Does well meet GWPS?		Y	Y	N	N
Parameter (mg/L)	**GWPS**				
Volatiles					
Benzene	0.005	0.0015	0.0011	**0.0326**	**0.0167**
Semivolatiles					
bis(2-chloroethyl)ether	0.0019	<0.00096	<0.00096	**0.0285**	0.0011 J
Field Parameters					
pH (S.U.)	NA	7	7.26	6.76	6.57
Temperature (°C)	NA	21.2	20.1	26.3	23.6
SC (µS/cm)	NA	1919	2460	1196	4240

NOTES:

GWPS - Groundwater Protection Standards from Table IV of Compliance Plan No. 50242 effective February 7, 2005

All samples collected January 31, 2014

CAO - Corrective Action Observation Well

POC - Point of Compliance Well

BKG - Background Well

Bolded values exceed the GWPS.

Y - All groundwater concentrations meet the GWPS

N - One or more groundwater concentrations exceed the GWPS

NA - Not Available/Applicable

mg/L - milligrams per liter

S.U. - Standard Units

SC - Specific Conductivity (microSiemens/centimeter, [mS/cm])

J - Estimated Concentration

< - Less than the sample detection limit

TABLE 3-3
Analytical Results for Lake Rosie Background and Point of Compliance Wells
First Half 2014 Report

Well ID		MP31-06-U02W-A	MP11-85-LR2W-A	MP11-85-LR3W-A	MP11-85-LR4W-A
Well Function		BKG	POC	POC	POC
Does well meet GWPS?		Y	N	N	Y
Parameter (mg/L)	**GWPS**				
Volatiles					
Benzene	0.005	<0.00034	**0.0099**	0.0041	<0.00034
Semivolatiles					
bis(2-chloroethyl)ether	0.0019	<0.00096	**0.002 J**	**0.0162**	0.0012 J
Field Parameters					
pH (S.U.)	NA	6.9	6.8	6.76	6.6
Temperature (°C)	NA	21.9	21.3	21.8	21.7
SC (µS/cm)	NA	891	2100	1562	2210

NOTES:

GWPS - Groundwater Protection Standards from Table IV of Compliance Plan No. 50242 effective February 7, 2005

All samples collected January 31, 2014

CAO - Corrective Action Observation Well

POC - Point of Compliance Well

BKG - Background Well

Bolded values exceed the GWPS.

Y - All groundwater concentrations meet the GWPS

N - One or more groundwater concentrations exceed the GWPS

NA - Not Available/Applicable

mg/L - milligrams per liter

S.U. - Standard Units

SC - Specific Conductivity (microSiemens/centimeter, [mS/cm])

J - Estimated Concentration

< - Less than the sample detection limit

TABLE 3-4

Monthly Totals of Recovered Groundwater from Lake Rosie CAS Wells and Mass Contaminants Removed

First Half 2014 Report

	Lake Rosie CAS	
	MP11-90-124R-A	**MP15-00-341R-A**
January	6,128	27,488
February	8,933	29,258
March	9,214	39,085
1st Quarter	24,275	95,831
April	8,245	34,230
May	8,162	33,743
June	6,476	27,872
2nd Quarter	22,883	95,845
Recovered Groundwater (gallons)	47,158	191,676
Total Indicator VOCs & SVOCs (mg/L)	0.21	0.02
Mass Contaminants Removed (lbs)	0.08	0.03

Notes:

(1) For indicator parameters that are non-detect, the sample detection limit (SDL) is used to sum the total mass removal of VOCs & SVOCs for each recovery well.

VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
mg/L - milligrams per liter
lbs - pounds

TABLE 4-1
Detected Analytical Results for Site-wide Recovery Wells
First Half 2014 Report

	Well ID	Building 180	Distal Plume	LaMarque	VA-5	532R-A
Parameter (mg/L)	**Tier 1 PCL**					
Volatiles						
1,1,2-Trichloroethane	0.005	<0.00035	<0.00035	<0.00035	**0.0635**	<0.0035
1,1-Dichloroethane	4.9	0.0032	<0.00034	0.0037	0.36	NA
1,1-Dichloroethylene	0.007	**0.0148**	<0.00045	**0.0274**	**0.119**	<0.0045
1,2-Dichloroethane	0.005	<0.00035	0.0011	0.00091 J	**5.88**	**0.0158**
Benzene	0.005	**0.1**	<0.00034	<0.00034	<0.0034	**0.756**
Chlorobenzene	0.1	0.00051 J	<0.00027	<0.00027	**0.159**	<0.0027
Chloroethane	9.8	0.0013	<0.00072	<0.00072	<0.0072	NA
cis-1,2-Dichloroethylene	0.07	0.0014	<0.0004	<0.0004	**0.233**	NA
Ethylbenzene	0.7	0.0687	<0.00032	<0.00032	<0.0032	NA
Toluene	1	0.0046	<0.00033	<0.00033	<0.0033	NA
trans-1,2-Dichloroethylene	0.1	0.00049 J	<0.00047	<0.00047	**0.263**	NA
Trichloroethene	0.005	0.00055 J	<0.00049	0.00057 J	**0.125**	**0.0104**
Vinyl chloride	0.002	**0.0069**	<0.00079	0.0012	**0.887**	<0.0079
Xylenes, Total	10	0.02	<0.00087	<0.00087	<0.0087	NA
Semivolatiles						
1,2-Dichlorobenzene	0.6	<0.0011	<0.0011	<0.0011	0.0056	NA
1,3-Dichlorobenzene	0.73	<0.0011	<0.0011	<0.0011	0.0213	NA
1,4-Dichlorobenzene	0.075	<0.0011	<0.0011	<0.0011	0.0097	<0.011
2-Methylnaphthalene	0.098	0.0045 J	<0.0012	<0.0012	<0.0012	NA
Acenaphthene	1.5	0.0095	<0.0012	<0.0012	<0.0012	NA
Acenaphthylene	1.5	0.0077	<0.0012	<0.0012	<0.0012	NA
Bis(2-chloroethyl)ether	0.00083	**0.0052**	**<0.00096**	**<0.00096**	**0.0224**	**<0.0096**
Fluorene	0.98	0.0026 J	<0.0012	<0.0012	<0.0012	NA
Naphthalene	0.49	0.0541	<0.001	<0.001	0.003 J	**5.02**
Phenanthrene	0.73	0.0024 J	<0.0015	<0.0015	<0.0015	NA

Notes:
Only detected compounds are reported.
All samples collected February 27, 2014
(a) - No concentration limit
Bolded values exceed the PCL
PCL - Protective Concentration Limit
mg/L - milligrams per liter
J - Estimated Concentration
NA - Not Applicable/Not Analyzed
< - Less than the sample detection limit

TABLE 5-1
Main Plant Response Action Plan (RAP) Monitoring Well Designations
First Half 2014 Report

VA-5 AREA

Attenuation Monitoring Point (AMP) Wells:

MP27-95-278P-A	MP27-01-153P-Ab	MP02-95-234W-Ab-R (replaced MP02-95-234W-Ab)	MP02-97-399W-Ab

Alternate Point of Exposure (APOE) Wells:

MP02-95-235W-Ab	MP02-97-391W-Ab	MP02-97-397W-Ab-R (replaced MP02-97-397P-Ab)

SWMU NO. 1 AREA

Attenuation Monitoring Point (AMP) Wells:

MP25-91-191W-A	MP02-95-236W-Ab-R (replaced MP02-95-236P-Ab)	MP02-95-236W-Ac-R (replaced MP02-95-236P-Ab)

Alternate Point of Exposure (APOE) Wells:

MP02-95-252P-A	MP02-96-360P-Ab	MP02-00-527P-Ab	MP02-00-528P-Ab
MP02-00-529P-Ab	MP02-01-571P-Ac	MP02-01-573P-Aa	MP02-01-573P-Ac
MP02-02-642P-A	MP02-01-584P-Ab	MP02-01-597P-Aa	

AOC 1 AREA

Attenuation Monitoring Point (AMP) Wells:

MP37-89-132W-A

Alternate Point of Exposure (APOE) Wells:

MP37-95-254W-A-R (replaced MP37-95-254P-A)	MP37-95-256P-A	MP37-95-269P-A

AOC 3 AREA

Attenuation Monitoring Point (AMP) Wells:

MP05-89-141W-A

Alternate Point of Exposure (APOE) Wells:

MP03-89-148W-A	MP03-89-149W-A

AOC 4 AREA

Attenuation Monitoring Point (AMP) Wells:

MP07-91-167W-A

Alternate Point of Exposure (APOE) Wells:

MP14-89-147W-A	MP07-00-568P-Ab

AOC 5 AREA

Attenuation Monitoring Point (AMP) Wells:

MP18-00-511P-Ab	MP19-00-516W-Ab-R (replaced MP19-00-516P-Ab)	MP18-00-525P-Ab	MP26-01-618W-Aa-R (replaced MP26-01-618P-Aa)

Alternate Point of Exposure (APOE) Wells:

MP23-89-135W-A	MP29-89-144W-A	MP26-89-152W-A	MP02-00-521W-Ab-R
MP27-01-621P-Aa	MP27-01-621P-Ac	MP18-12-694W-A	(replaced MP02-00-521P-Ab)

Attachment 1

CH2MHILL Geoscience Firm No. 50264	PROJECT NUMBER: 489817	BORING NUMBER: MP02-14-698W-A
	SOIL BORING LOG Sheet 1 of 1	

PROJECT : TCO Offsite Well Installation, Texas City Texas — LOCATION : (13708089.1 N, 3259186.7 E)

ELEVATION : 4.9 ft — DRILLING CONTRACTOR : Fugro

DRILLING METHOD AND EQUIPMENT : CME,/Hollow Stem Auger

WATER LEVELS: 2.7 ft bgs — START : 4/10/2014 — END : 4/11/2014 — LOGGER : J. McFarlain\HOU

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (%)	SAMPLE TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	COMMENTS	WELL DIAGRAM
4.9				Asphalt with underlying road base			Concrete
		100.0	ST-1	CLAY (CH), gray to light gray, dry, very stiff, high plasticity, no odor			
5 -0.1		100.0	SS-2				Grout
		100.0	ST-3	CLAY (CL), silty, gray to light gray with yellow-brown mottling, dry, medium soft, medium plasticity, no odor			
		100.0	SS-4	CLAY (CH), reddish-brown with light gray mottling, dry, very stiff, high plasticity, soil appearing glossy at select intervals, occasional ferrous nodules, no odor			
10 -5.1		100.0	ST-5				Bentonite (3/8" Chips)
		100.0	SS-6				
15 -10.1		100.0	ST-7	SAND (SM), silty, brown, moist, loose, very-fine grain, no odor			
		100.0	SS-8	CLAY (CH), reddish-brown with light gray mottling, dry, very stiff, high plasticity, soil appearing glossy at select intervals, occasional ferrous nodules, no odor			
		100.0	ST-9	SAND (SM), silty, brown to light gray, wet, loose, very-fine grain, no odor			20/40 Silica Sand
20 -15.1		100.0	SS-10				
		100.0	ST-11	SAND (SP), brown to gray, wet, loose, occasional clayey intervals, no odor			
	24.0					Terminal depth at roughly 24.5 feet bgs	Cap

PROJECT NUMBER	WELL NUMBER	
489817	MP02-14-698W-A	SHEET 1 OF 1

WELL COMPLETION DIAGRAM

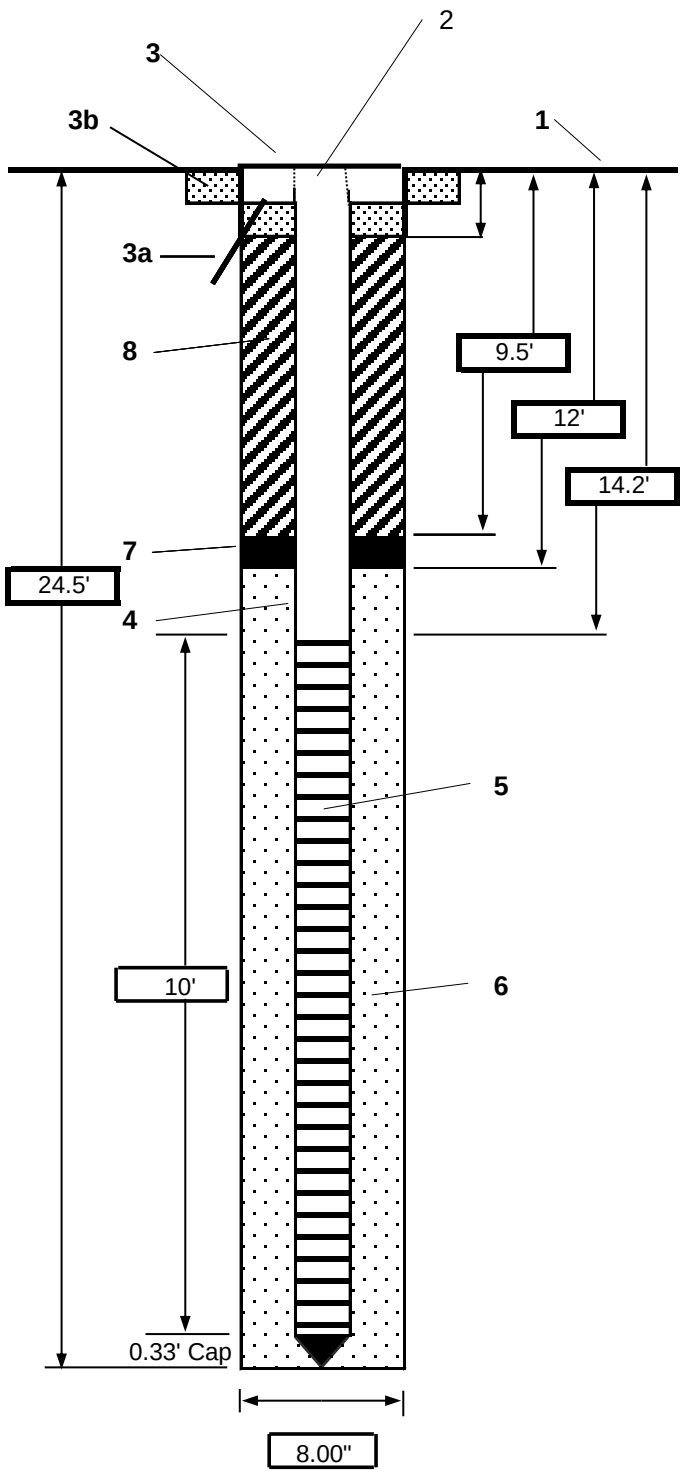
PROJECT: TCO MP Offsite Well Installation

LOCATION: Dow Texas City Operations (TCO), Texas City, TX — Northing: 13708089.099

DRILLING CONTRACTOR / DRILLER: Fugro Consultants / Jose Herrera — Easting: 3259186.722

DRILLING METHOD AND EQUIPMENT USED: Hollow Stem Auger via CME Drill Rig

STATIC WATER LEVEL: 2.43' START: 4/10/2014 END: 4/11/2014 Field Oversight By: Joshua McFarlain



1- Ground elevation at well: 4.90

2- Top of casing elevation: 4.66

3- Wellhead protection cover type: Flush Mount
- a) drain tube?: none
- b) concrete pad dimensions: 2'x2'x1'

4- Dia./type of well casing: 2" / Polyvinyl Chloride (PVC)

5- Type/slot size of screen: PVC / 0.01" Slot

6- Type screen filter: 20/40 Silica Sand

7- Type of seal: 3/8" Bentonite Holeplug

8- Grout
- a) Grout mix used: Type I Portland Cement / Quick Gel Mix
- b) Method of placement: Tremie Piping

Development method: Pump and Surge

Development time (minutes): 60

Estimated purge volume (gallons): 25

Comments: None

STATE OF TEXAS WELL REPORT for Tracking #363495

Owner:	**Dow Chemical Company**	Owner Well #:	**MP02-14-698W-A**
Address:	**3301 5TH Avenue South Texas City , TX 77590**	Grid #:	**64-41-2**
Well Location:	**3301 5th Avenue South Texas City , TX 77590**	Latitude:	**29° 22' 01" N**
Well County:	**Galveston**	Longitude:	**094° 56' 01" W**
Elevation:	**No Data**	GPS Brand Used:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date:	Started: **4/10/2014** Completed: **4/11/2014**
Diameter of Hole:	Diameter: **8 in From Surface To 24.5 ft**
Drilling Method:	**Hollow Stem Auger**
Borehole Completion:	Gravel Packed From: **24.5 ft to 12 ft** Gravel Pack Size: **20/40**
Annular Seal Data:	1st Interval: **From 10 ft to 12 ft with 1 bent chips (#sacks and material)** 2nd Interval: **From 0 ft to 10 ft with 2 portland/bent (#sacks and material)** 3rd Interval: **No Data** Method Used: **Tremie** Cemented By: **Jose Herrera** Distance to Septic Field or other Concentrated Contamination: **No Data** Distance to Property Line: **No Data** Method of Verification: **No Data** Approved by Variance: **No Data**
Surface Completion:	**Surface Slab Installed**

Water Level:	Static level: **2.7 ft. below land surface on 4/10/2014** Artesian flow: **No Data**
Packers:	**No Data**
Plugging Info:	Casing or Cement/Bentonite left in well: **No Data**
Type Of Pump:	**No Data**
Well Tests:	**No Data**

Water Quality:	Type of Water: **No Data** Depth of Strata: **No Data** Chemical Analysis Made: **No Data** Did the driller knowingly penetrate any strata which contained undesirable constituents: **No Data**
Certification Data:	The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure

to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information:	**Fugro Consultants** **6105 Rookin St** **Houston , TX 77074**
Driller License Number:	**54221**
Licensed Well Driller Signature:	**Jose Herrera**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**No Data**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking #**363495**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0 to 17ft Gray/Brown clay
17ft to 24.5ft Gray/Brown very fine sand

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
2in new pvc screen 12.5 to 24.5 schd 40
2in new pvc casing o to 12.5 schd 40

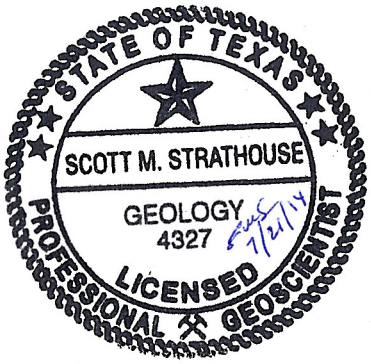
CH2MHILL

Geoscience Firm No. 50264

PROJECT NUMBER:	BORING NUMBER:
489817	MP02-14-699W-A

SOIL BORING LOG

Sheet 1 of 1



PROJECT : TCO Offsite Well Installation, Texas City Texas

LOCATION : (13706596.6 N, 3260758.4 E)

ELEVATION : 8.2 ft

DRILLING CONTRACTOR : Fugro

DRILLING METHOD AND EQUIPMENT : CME, Hollow Stem Auger

WATER LEVELS: 3.5 ft bgs

START : 4/9/2014

END : 4/10/2014

LOGGER : J. McFarlain\HOU

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (%)	SAMPLE TYPE	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	COMMENTS	WELL DIAGRAM
8.2				Asphalt with underlying road base			Concrete
		0.0	SS	No Recovery			
5							
3.2		40.0	SS	CLAY (CH), light gray with yellow-brown mottling, dry, very stiff, high plasticity, abundant calcareous nodules, no odor			Grout
10							
-1.8		100.0	ST	color becomes light gray with reddish-brown mottling			
		100.0	SS				
15							
-6.8		100.0	ST				Bentonite
		100.0	SS				
		100.0	ST	SANDY CLAY (CL) to CLAYEY SAND (SC), light brown and light gray, moist, soft, low plasticity, shell hash throughout, no odor			
20							
-11.8		100.0	SS	SAND (SP), light brown to light gray, wet, loose, very-fine grain, no odor			
		100.0	ST				
25							20/40 Silica Sand
-16.8		100.0	SS				
		100.0	ST				
		100.0	SS	CLAY (CH), light gray with reddish-brown mottling, dry, very stiff, high plasticity, no odor		Terminal depth at roughly 30 feet bgs	
30	30.0						Cap

CH2MHILL	**PROJECT NUMBER** 489817	**WELL NUMBER** MP02-14-699W-A SHEET 1 OF 1

WELL COMPLETION DIAGRAM

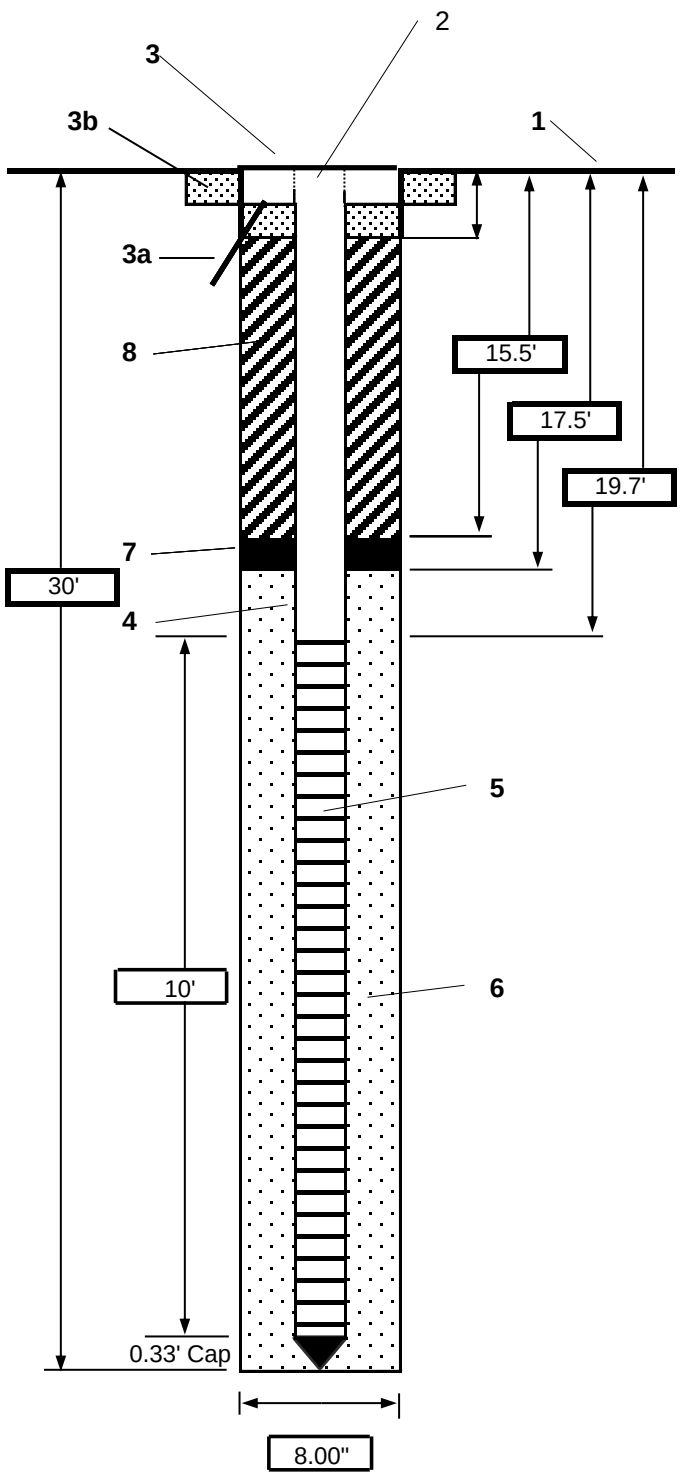
PROJECT: TCO MP Offsite Well Installation

LOCATION: Dow Texas City Operations (TCO), Texas City, TX — Northing: 13706596.627

DRILLING CONTRACTOR / DRILLER: Fugro Consultants / Jose Herrera — Easting: 3260758.382

DRILLING METHOD AND EQUIPMENT USED: Hollow Stem Auger via CME Drill Rig

STATIC WATER LEVEL: 4.02' START: 4/9/2014 END: 4/10/2014 Field Oversight By: Joshua McFarlain



1- Ground elevation at well: 8.20

2- Top of casing elevation: 8.73

3- Wellhead protection cover type: Flush Mount
a) drain tube?: none
b) concrete pad dimensions: 2'x2'x1'

4- Dia./type of well casing: 2" / Polyvinyl Chloride (PVC)

5- Type/slot size of screen: PVC / 0.01" Slot

6- Type screen filter: 20/40 Silica Sand

7- Type of seal: 3/8" Bentonite Holeplug

8- Grout
a) Grout mix used: Type I Portland Cement / Quick Gel Mix
b) Method of placement: Tremie Piping

Development method: Pump and Surge

Development time (minutes): 30

Estimated purge volume (gallons): 36

Comments: None

STATE OF TEXAS WELL REPORT for Tracking #363497

Owner:	**Dow Chemical Company**	Owner Well #:	**MP02-14-699W-A**
Address:	**3301 5th Street South Texas City , TX 77590**	Grid #:	**64-41-2**
Well Location:	**3301 5th Street South Texas City , TX 77590**	Latitude:	**29° 22' 00" N**
Well County:	**Galveston**	Longitude:	**094° 56' 01" W**
Elevation:	**No Data**	GPS Brand Used:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date:	Started: **4/9/2014** Completed: **4/10/2014**
Diameter of Hole:	Diameter: **8 in From Surface To 30 ft**
Drilling Method:	**Hollow Stem Auger**
Borehole Completion:	Gravel Packed From: **18 ft to 30 ft** Gravel Pack Size: **20/40**
Annular Seal Data:	1st Interval: **From 16 ft to 18 ft with 1 Bag Bent chip (#sacks and material)** 2nd Interval: **From 1 ft to 16 ft with 2 portland ceme (#sacks and material)** 3rd Interval: **No Data** Method Used: **Tremie** Cemented By: **Jose Herrera** Distance to Septic Field or other Concentrated Contamination: **No Data** Distance to Property Line: **No Data** Method of Verification: **No Data** Approved by Variance: **No Data**
Surface Completion:	**Surface Slab Installed**

Water Level:	Static level: **3.5 ft. below land surface on 4/9/2014** Artesian flow: **No Data**
Packers:	**No Data**
Plugging Info:	Casing or Cement/Bentonite left in well: **No Data**
Type Of Pump:	**No Data**
Well Tests:	**No Data**

Water Quality:	Type of Water: **No Data** Depth of Strata: **No Data** Chemical Analysis Made: **No Data** Did the driller knowingly penetrate any strata which contained undesirable constituents: **No Data**
Certification Data:	The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the

statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information:	**Fugro Consultants** **6105 Rookin St** **Houston , TX 77074**
Driller License Number:	**54221**
Licensed Well Driller Signature:	**Jose Herrera**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**No Data**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking #**363497**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0 to 17ft Gray/Brown Clay
17ft to 28ft Brown/Gray sand
28ft to 30ft Gray Clay

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
2in New PVC Casing 0ft to 20ft
2in New PVC Screen 20ft to 30ft

CH2MHILL

Geoscience Firm No. 50264

PROJECT NUMBER: 489817	BORING NUMBER: MP02-14-700W-A

SOIL BORING LOG

Sheet 1 of 1

PROJECT : TCO Offsite Well Installation, Texas City Texas

LOCATION : (13706238.7 N, 3260771.3 E)

ELEVATION : 9.6 ft

DRILLING CONTRACTOR : Fugro

DRILLING METHOD AND EQUIPMENT : CME, Hollow Stem Auger

WATER LEVELS: 4.2 ft bgs

START : 4/9/2014

END : 4/11/2014

LOGGER : J. McFarlain\HOU

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (%)	SAMPLE TYPE	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	COMMENTS	WELL DIAGRAM
9.6				Asphalt with underlying road base			Concrete
		100.0	ST-1	CLAY (CH), light to dark brown, dry, very stiff, high plasticity, occasional calcareous concretions, no odor			
5 4.6		100.0	SS-2				
		100.0	ST-3	color grading to light gray with brown			
		100.0	SS-4	CLAY (CL), silty, light gray with yellow-brown mottling, dry, medium stiff, medium plasticity, traces of very-fine grain sand, no odor			Grout
10 -0.4		100.0	ST-5	color grades to light gray with brown			
		100.0	SS-6	CLAY (CH), reddish-brown with light gray, dry, very still, high plasticity, no odor			
15 -5.4		100.0	ST-7	SAND (SC), silty with trace clay, light gray, dry, soft, low plasticity, very-fine grain, no odor CLAY (CH), reddish-brown with light gray, dry, very still, high plasticity, no odor			Bentonite
		100.0	SS-8				
		100.0	ST-9	SAND (SC), silty with traces of clay, light gray to light brown, moise, loose very-fine grain, no odor			
20 -10.4		100.0	SS-10	SAND (SM), silty, light brown to light gray, wet, dense, very-fine grain, no odor			
		100.0	ST-11	SAND (SP), light brown to light gray, wet, loose, very-fine grain, no odor			
25 -15.4		100.0	SS-12				20/40 Silica Sand
		100.0	ST-13			Terminal depth at roughly 30 feet bgs	
		0.0	SS-14	Sample not recovered due to heaving sands			
30	30.0						Cap

PROJECT NUMBER	WELL NUMBER	
489817	MP02-14-700W-A	SHEET 1 OF 1

WELL COMPLETION DIAGRAM

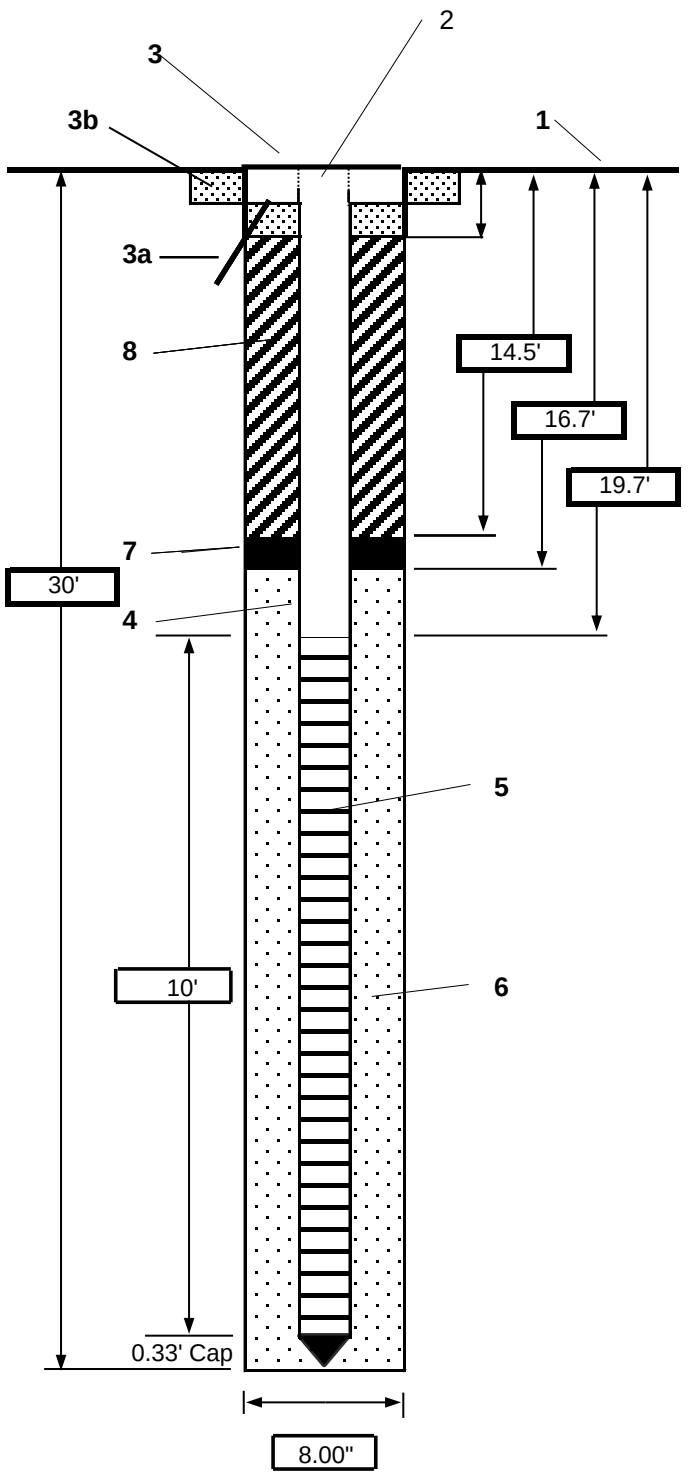
PROJECT: TCO MP Offsite Well Installation

LOCATION: Dow Texas City Operations (TCO), Texas City, TX — Northing: 13706238.681

DRILLING CONTRACTOR / DRILLER: Fugro Consultants / Jose Herrera — Easting: 3260771.341

DRILLING METHOD AND EQUIPMENT USED: Hollow Stem Auger via CME Drill Rig

STATIC WATER LEVEL: 4.31' START: 4/9/2014 END: 4/11/2014 Field Oversight By: Joshua McFarlain



1- Ground elevation at well: 9.60

2- Top of casing elevation: 9.68

3- Wellhead protection cover type: Flush Mount
a) drain tube?: none
b) concrete pad dimensions: 2'x2'x1'

4- Dia./type of well casing: 2" / Polyvinyl Chloride (PVC)

5- Type/slot size of screen: PVC / 0.01" Slot

6- Type screen filter: 20/40 Silica Sand

7- Type of seal: 3/8" Bentonite Holeplug

8- Grout
a) Grout mix used: Type I Portland Cement / Quick Gel Mix
b) Method of placement: Tremie Piping

Development method: Pump and Surge

Development time (minutes): 60

Estimated purge volume (gallons): 28

Comments: None

STATE OF TEXAS WELL REPORT for Tracking #363499

Owner:	**Dow Chemical**	Owner Well #:	**MP02-14-700W-A**
Address:	**3301 5th Avenue Texas City , TX 77590**	Grid #:	**64-41-2**
Well Location:	**3301 5th Avenue South Texas City , TX 77590**	Latitude:	**29° 22' 01" N**
Well County:	**Galveston**	Longitude:	**094° 56' 01" W**
Elevation:	**No Data**	GPS Brand Used:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date:	Started: **4/9/2014** Completed: **4/11/2014**
Diameter of Hole:	Diameter: **8 in From Surface To 30 ft**
Drilling Method:	**Hollow Stem Auger**
Borehole Completion:	Gravel Packed From: **18 ft to 30 ft** Gravel Pack Size: **20/40**
Annular Seal Data:	1st Interval: **From 16 ft to 18 ft with 1 Bentonite chi (#sacks and material)** 2nd Interval: **From 1 ft to 18 ft with 3 Portland ceme (#sacks and material)** 3rd Interval: **No Data** Method Used: **Tremie** Cemented By: **Jose Herrera** Distance to Septic Field or other Concentrated Contamination: **No Data** Distance to Property Line: **No Data** Method of Verification: **No Data** Approved by Variance: **No Data**
Surface Completion:	**Surface Slab Installed**

Water Level:	Static level: **4.2 ft. below land surface on 4/9/2014** Artesian flow: **No Data**
Packers:	**No Data**
Plugging Info:	Casing or Cement/Bentonite left in well: **No Data**
Type Of Pump:	**No Data**
Well Tests:	**No Data**

Water Quality:	Type of Water: **No Data** Depth of Strata: **No Data** Chemical Analysis Made: **No Data** Did the driller knowingly penetrate any strata which contained undesirable constituents: **No Data**
Certification Data:	The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the

statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

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Comments:	**No Data**

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DESC. & COLOR OF FORMATION MATERIAL

From (ft)	To (ft)	Description
0	**17ft**	**Gray/Brown Clay**
17ft	**30ft**	**Brown/Gray Sand**

CASING, BLANK PIPE & WELL SCREEN DATA

Dia.	New/Used	Type	Setting From/To
2in	**New**	**PVC Casing**	**0 to 20ft Sch40**
2in	**New**	**PVC Screen**	**20 to 30ft Sch40**

Attachment 2

IPDA Recovery System

TCEQ Notifications

No notifications to the TCEQ have been made during this reporting period.

System Maintenance and Repairs

IPDA Separation System:

Following the freeze protection procedure, The IPDA Recovery System was down from January 7 to 9, 2014 and from January 28 to 29, 2014.

Lake Rosie Recovery System

TCEQ Notifications

No notifications to the TCEQ have been made during this reporting period.

System Maintenance and Repairs

Following the freeze protection procedure, the Lake Rosie Recovery System was down from January 7 to 9, 2014 and from January 25 to 29 2014.

Well MP33-00-341R-A:

1. Well 341R-A was down for 3 days from February 10 to 12, 2014. This well was down for Dow technicians to update the safety valve.

Well 132 Area Recovery System

System Maintenance and Repairs

Following the freeze protection procedure, the Well 132 Area Recovery System was down from January 7 to 9, 2014 and from January 25 to 29, 2014.

Well MP37-00-532R-A:

1. Well 532R-A was down for 12 days from January 11 to 22, 2014. This recovery well was down to repair and replace the pump.

2. Well 532R-A was down for 25 days from February 3 to 27, 2014. This recovery well was down to clear a clogged section in the discharge line located inside the pipe rack.

3. Well 532R-A was down for 2 days from March 20 to 21, 2014. This recovery well was down to repair and replace the pump.

4. Well 532R-A was down for 13 days from April 17 to 29, 2014. This recovery well was down to repair and replace the pump.

5. Well 532R-A was down for 13 days from May 22 to June 3, 2014. This recovery well was down to repair and replace the pump.

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VA-5 Recovery System

System Maintenance and Repairs

Following the freeze protection procedure, the VA-5 Recovery System was down from January 7 to 9, 2014 and from January 28 to 29 2014.

The VA-5 Recovery Well:

1. The VA-5 Recovery Well was down for 1 day on February 3, 2014. This recovery well was down due to a stalled AOD pump.

2. The VA-5 Recovery Well was down for 8 days from February 16 to 23, 2014. This recovery well was down to replace the diaphragms on the recovery pump.

3. The VA-5 Recovery Well was down for 13 days from April 17 to 29, 2014. This recovery well was down to repair and replace the pump.

4. The VA-5 Recovery Well was down for 12 days from June 6 to 17, 2014. This recovery well was down to repair and replace the pump.

La Marque/ASP Recovery System

System Maintenance and Repairs

Following the freeze protection procedure, the La Marque/ASP Recovery System was down from January 7 to 9, 2014 and from January 28 to 29, 2014.

The Building 180 Recovery Well:

1. The Building 180 Recovery Well was down for 14 days from April 17 to 30, 2014. This recovery well was down to replace the recovery pump.

The Distal Plume Recovery Well:

1. The Distal Plume Recovery Well was down for 4 days from April 11 to 14, 2014. This recovery well was down to repair the recovery pump.

2. The Distal Plume Recovery Well was down for 1 day on May 7, 2014. This recovery well was down to replace the recovery pump.